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To: Prospective Bidders
From: Wold Architects and Engineers
Date: February 5, 2013
Comm. No: 122118

Subject: Addendum #1 for Proposal Documents for the: City of Minneapolis (OP 7761)
EOTF Backup Generator
Minneapolis, Minnesota

PROPOSALS DUE FEBRUARY 14, 2013 AT 10:00 A.M.

This addendum forms a part of the Contract Documents dated December 21, 2012. Acknowledge receipt of this Addendum on the space provided on the Proposal Form. Failure to do so may result in disqualification of Proposal.

This Addendum consists of two (2) typed sheets and attachments:

Specification Sections: 00 01 10, 01 71 23, 01 89 13, 02 01 00, 02 01 10, 02 41 00, 31 00 00, 31 25 00, 32 12 00, 32 13 13, 32 92 23.

Drawings: 1, 2, 3, 4, 5, 6, 7, 8, 9

Other: Pre-Bid Meeting Minutes

PROJECT MANUAL

A. SPECIFICATION SECTION 00 01 10 TABLE OF CONTENTS

1. Reissued this addendum.

B. SPECIFICATION SECTION 01 71 23 FIELD ENGINEERING

1. Issued this addendum.

C. SPECIFICATION SECTION 01 89 13 STORM WATER POLLUTION PREVENTION PLAN

1. Delete section in its entirety.

D. SPECIFICATION SECTION 02 01 00 EXISTING UTILITIES

1. Delete section in its entirety.

E. SPECIFICATION SECTION 02 01 10 EXISTING UTILITIES

1. Issued this addendum.

F. SPECIFICATION SECTION 02 41 00 SITE DEMOLITION AND REMOVALS

1. Issued this addendum.

G. SPECIFICATION SECTION 26 05 73 OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDY

1. Add paragraphs 1.01 B and C as follows:

"B. A copy of the original one-line diagram will be made available for use in the study. Contractor shall field-verify existing fuse and breaker manufacturer/model data.

C. Scope of study encompasses new generator and transfer switch(es), existing MSB-1, DP-EM1, DP-1, DP-2 and UPS, and overcurrent devices within each."

H. SPECIFICATION SECTION 31 00 00 EARTHWORK

1. Issued this addendum.

I. SPECIFICATION SECTION 31 25 00 EROSION CONTROL

1. Issued this addendum.

J. SPECIFICATION SECTION 32 12 00 ASPHALTIC CONCRETE PAVING

1. Issued this addendum.

K. SPECIFICATION SECTION 32 13 13 EXTERIOR CONCRETE WORK

1. Issued this addendum.

L. SPECIFICATION SECTION 32 92 23 SODDING

1. Issued this addendum.

DRAWINGS

A. DRAWING 1 REMOVALS PLAN

1. Issued this addendum.

B. DRAWING 2 SITE PLAN

1. Issued this addendum.

C. DRAWING 3 GRADING AND DRAINAGE PLAN

1. Issued this addendum.

D. DRAWING 4 GENERAL NOTES

1. Issued this addendum.

E. DRAWING 5 SILT FENCE DETAIL

1. Issued this addendum.

F. DRAWING 6 D-412 CURB & GUTTER DETAIL

1. Issued this addendum.

G. DRAWING 7 D-412 CURB TERMINATOR DETAIL

1. Issued this addendum.

H. DRAWING 8 BOLLARD DETAIL

1. Issued this addendum.

I. DRAWING 9 BITUMINOUS PAVEMENT DETAIL

1. Issued this addendum.

J. DRAWING E1.0 – ELECTRICAL PLAN & PARTIAL RISER DIAGRAMS

1. At Detail H2 Electrical Plan

Refer to 250kW Generator. Add note as follows:

“Provide concrete pad per manufacturer’s recommendations. Coordinate pad with grading, see Civil Detail Drawing 3, Grading and Drainage Plan. The grade changes approximately ten inches from one side of pad to other. Top of pad shall be level. Taper thickness of pad as required such that top of pad is at least 2” above grade and bottom of pad is at least 4” below grade (or as recommended by generator manufacturer). Maintain a minimum thickness of pad as recommended by generator manufacturer. Field coordinate exact grading requirements with Civil Engineer.”

END OF ADDENDUM #1

SECTION 00 01 10

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SECTION 01 71 23

FIELD ENGINEERING

PART 1 - GENERAL

1.01 APPLICABLE DOCUMENTS

- A. Bidding Requirements, Conditions of the Contract and pertinent portions of Sections in Division 00 and 01 of these Specifications apply to the Work of this Section.

1.02 REQUIREMENTS INCLUDED

- A. Contractor shall provide and pay for field engineering services required for the Project, including the following:
 - 1. Establish lines and levels for proper location and layout of proposed improvements.
 - 2. Establish, maintain and perpetuate site control for layout of the site improvements (establishment and perpetuation of this site control is critical as it will be used by others on all subsequent phases of the project).

1.03 QUALIFICATIONS OF SURVEYOR OR ENGINEER

- A. Entity retained by the Contractor to perform surveying or field engineering services shall be a Registered Professional of the discipline required for the specific service on the Project, licensed in state of Minnesota.

1.04 PROJECT SURVEY REQUIREMENTS

- A. The following work shall be provided by the Contractor's Registered Land Surveyor.
 - 1. Establish and continually maintain lines and levels, laid out by instrumentation, for all proposed site improvements, including rough and finish grading, curbing, pavements, elevations, and other miscellaneous site improvements.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION 01 71 23

SECTION 02 01 10

EXISTING UTILITIES

PART 1 - GENERAL

1.01 APPLICABLE DOCUMENTS

- A. Bidding Requirements, Conditions of the Contract and pertinent portions of Sections in Division 00 and 01 of these Specifications apply to the Work of this Section.

1.02 NOTIFICATION

- A. The Contractor shall notify public utility companies and municipalities as to which of their properties (such as pole lines, conduits, fiber optic lines, gas pipes, TV lines, cable lines, telephone lines, water pipes, sewers and tile lines) must be removed or relocated to complete the work. This notice shall note the locations to where their properties could be relocated. However, no warranty is made or implied that the utility owners will remove or relocate their properties prior to commencement of construction operations or in sufficient time or manner to prevent interference with the Contractor's operations.
- B. The Contractor shall give notice to the owners of all known utilities at least 48 hours before starting any operations affecting those properties. If during the course of his operations, the Contractor discovers utility property whose existence was not known, he shall immediately notify the owner thereof and the Engineer.
- C. Construction operations adjacent to utility property shall not be commenced until arrangements satisfactory to the utility owner have been made for the protection of said property and continuation of service. Should any of the Contractor's equipment come in contact with or damage utility property in any way, even though there may be no apparent evidence of breakage or harm, the Contractor shall promptly notify the proper authorities and cooperate with them in determining damage and restoring interrupted services as may be needed. Where contact is made with a utility, operations shall be suspended immediately, and the area vacated, until it has been determined by the utility owner that it is safe to resume operations.

1.03 COMPENSATION

- A. It is understood and agreed that the Bidder has considered in his bid the relative locations of existing utilities, as shown on the Plans and that no additional compensation will be allowed for any delays, inconveniences or damages sustained due to interference which may result from those utilities or the operations of moving them.
- B. If the Contractor is required to perform any special work or use special construction methods in prosecuting work adjacent to underground utility property whose existence was not indicated in the Contract, equitable compensation will be made for the additional costs incurred.
- C. The Contractor shall employ the local utility companies to relocate existing utilities which are affected by the proposed construction. **No additional compensation will be provided for relocation of existing utilities, as shown on the Drawings.**
- D. The Contractor is responsible to hire the services of a utility locator company to locate all privately owned utilities that may be disturbed by construction operations.

1.04 CARE AND RESPONSIBILITY

- A. The Contractor shall employ special equipment or construction methods (including hand labor, if necessary) to accomplish the work as planned adjacent to utility properties without damage thereto. At no time shall the Contractor interfere with any persons engaged in protecting or moving utility property or in the operation of the utility.

- B. The Contractor shall assume full responsibility for reimbursing the utility owners for any damages caused to utility properties whose existence and approximate locations were made known to him before the damage was done. Nothing in this Section shall make the Contractor liable for damage to utility property located below the ground surface, in the absence of negligence, if the owner of the utility, after reasonable notice from the Contractor, fails to advise the Contractor of its location and approximate depth below the ground surface.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION 02 01 10

SECTION 02 41 00

SITE DEMOLITION AND REMOVALS

PART 1 - GENERAL

1.01 APPLICABLE DOCUMENTS

- A. Bidding Requirements, Conditions of the Contract and pertinent portions of Sections in Division 00 and 01 of these Specifications apply to the Work of this Section.

1.02 SUMMARY

- A. Section Includes: Include labor, materials, equipment, and accessories to provide removal operations as follows:
 - 1. Provide removal of miscellaneous bituminous pavements, concrete curb and gutter, and other miscellaneous existing site features which are in the path of proposed improvements.
- B. Related Sections:
 - 1. Section 31 00 00: Earthwork
- C. Work Specified in Other Sections:
 - 1. Refer to Electrical specifications and plans for site electrical removals.

1.03 SITE CONDITIONS

- A. Protection of Persons: Install barricades as part of this work and post with warning lights.
- B. Bench Marks and Monuments: Maintain bench marks and monuments existing on site.
- C. Protection of Existing Property to Remain: Protect existing trees and vegetation, equipment, pavements, curbing, facilities, utilities, and structures which are in area where work will be performed and which are to remain. Repair or replace existing property which is to remain that is damaged by the work, to Owner's satisfaction and at no additional cost to the Owner.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 SITE REMOVALS

- A. General: Those structures and facilities that are to be removed or relocated are generally indicated on the Drawings. The Contractor shall remove and dispose of off site all structures except for that which is permitted to remain upon determination being made by the Engineer, that their existence does not interfere with, endanger, or detract from the new construction in any way.
- B. **Visit the site prior to bidding; be familiar with actual conditions in the field. Extra compensation will not be allowed for conditions which could have been determined or anticipated by examination of the site, the Contract Drawings and the information available pertaining to existing soils, utilities and other site characteristics.**
- C. Removal Operations: All removal operations that may endanger new construction shall be completed prior to construction of affected work.

- D. Compliance with Instructions, Ordinances and State Laws: The Contractor shall comply with all instructions and ordinances of the State of Minnesota, and all counties and municipalities regarding disposals, signs, advertising, traffic corners, danger signals, barricades, fire protection, and all safety laws, ordinances and rulings.
- E. Disposal of Materials and Debris: All debris resulting from the removal and demolition operations shall be disposed of off-site by the Contractor subject to any specific regulations imposed by laws, ordinances, orders and decrees.
- F. Removal of Existing Pavements: Where a portion of an existing pavement is to be retained for use, that portion shall not be damaged during removal operations. In removing concrete and bituminous pavements, sidewalks, curbs and similar structures, where the cut will be exposed in the finished work, the structure shall, unless the removal is made to an existing joint and unless determining otherwise by the Engineer, be sawed along the removal lines with a concrete saw to a depth of not less than 1/3 the thickness of the concrete or bituminous before breaking off the concrete or bituminous. In such cases, the use of wedges, driven into the saw cut to break off the portion to be removed, will not be permitted. Elsewhere, the structure shall be cut and chipped to true lines and vertical faces. All pavement materials to be removed shall be removed from site, unless noted otherwise.
 - 1. Where removal of pavement will result in the finished edge or will be abut new pavement, sawcutting shall occur immediately prior to paving or at a time when damage to the sawcut edge is minimized.

END OF SECTION 02 41 00

SECTION 31 00 00

EARTHWORK

PART 1 - GENERAL

1.01 APPLICABLE DOCUMENTS

- A. Bidding Requirements, Conditions of the Contract and pertinent portions of Sections in Division 00 and 01 of these Specifications apply to the Work of this Section.

1.02 SUMMARY

- A. The extent of earthwork is shown on the Drawings. This work will generally consist of, but is not limited to, the following:
1. Stripping and stockpiling of topsoil and other soils to be reused.
 2. Earthwork (cutting and filling).
 3. Construction and maintenance (on interim basis) of pavement subgrades.
 4. Shaping and compacting the subgrade prior to placement of pavement base thereon.
 5. Compacting fill and backfill.
 6. Removal and replacement of unsuitable and unstable soils, rocks, etc.
 7. Importing granular fill for construction of pavement subgrades and in conjunction with dewatering operations, as needed.
 8. Dewatering of site and excavations to maintain workable conditions and to protect on-site soils from becoming unstable.
 9. Importing Topsoil Borrow as required to accomplish finish grading in order to provide a minimum 6" thickness of topsoil.
 10. Spreading and respreading of imported or salvaged topsoil.
 11. Maintaining existing site, adjacent properties and public streets clean (on a daily basis) from construction caused dirt and debris.
 12. Maintaining dust control during grading operations. Providing for watering of soils as required to control dust.
 13. Restoration and cleanup.
- B. Related work specified in other sections:
1. Section 31 25 00: Erosion Control
 2. Section 32 12 00: Asphaltic Concrete Paving
 3. Section 32 16 00: Exterior Concrete Work
 4. Section 32 92 23: Sodding

1.03 REFERENCES

- A. The latest issue of the following specifications, definitions and test methods are incorporated in this specification by reference:
1. Minnesota Department of Transportation (Mn/DOT) Standard Specifications for Construction.
 2. American Society of Testing and Materials (ASTM) D2487, Classification of Soils for Engineering Purposes.
 3. ASTM D698, Standard Test Methods for Moisture-Density Relations of Soils - Standard Proctor.

1.04 DEFINITIONS

- A. Clearing: Removal of trees, vegetation, rubble and other unsuitable materials from the site or limits of work.
- B. Stripping: Excavation and removal of topsoil, fill and any other upper layers of soils.
- C. Excavation: Cutting, digging and removing soil materials of every classification and of whatever substance encountered to dimensions, limits, elevation and contours shown on the Drawings.
- D. Unsuitable Materials: Rock, loam, gumbo, mud, muck, silt, organic silty clay, peat, boulders, debris, rubbish, contaminated soils, old foundations, pavements, slabs, vegetation or highly organic soils.
- E. Unstable Materials: Materials which are not classified as unsuitable materials, but due to their condition of being too wet, too dry, over-compacted or frozen, are unacceptable.
- F. Soil Classification: Classification of soils for engineering purposes, ASTM D2487 Unified Soils Classification System (USCS) with divisions, group symbols, typical names and criteria referenced herein.
- G. Backfill: Placing of approved site soil or borrow material in accordance with specified procedures and compaction to establish elevations shown for site improvements and general rough grading.
- H. Sub-base: Compacted fill upon which stabilized base course is placed.
- I. Subgrade: Subsoil in place, backfill or fill material upon which sub-base, stabilized base course, footings, sand cushions or sand bases are placed.
- J. Compacted Subgrade: Upper part of subgrade that is compacted to a greater density than lower portion of subgrade or subsoil. This material occurs beneath drives, roadways and parking areas.
- K. Subsoil: Natural soil in place on the site.
- L. Existing Site Material: Stripped and excavated material from work, of approved classification. Material must be approved by soils testing agency and the Environmental Engineer prior to placement.
- M. Borrow Material: Approved soil materials for fill, backfill, or rough grading required, from sources other than those made available by stripping of excavation of site.
- N. Building Area: The area of the site within a line three feet outside of the proposed building perimeter footings and extending at a slope of 1:1 (horizontal to vertical) to the bottom of the excavation.
- O. Rock: Rock excavation is defined to include all hard, solid rock in ledge formation, bedded deposits and unstratified masses; all natural conglomerate deposits so firmly cemented as to present all the characteristics of solid rock; and any boulder stone, masonry or concrete fragments exceeding one cubic yard in volume. Materials such a shale, hard pan, soft or disintegrated rock which can be dislodged with a power operated excavator will not be classified as rock excavation.
- P. Topsoil: Fertile, friable, natural loam containing a liberal amount of humus and capable of sustaining vigorous plant growth. The pH value of the topsoil shall be between 5.5 and 7.5.

1.05 JOB CONDITIONS

A. Site Information:

1. All information concerning property boundaries, ground elevations, present obstructions on or near the site, location of conduits, pipes, wires, etc., has been obtained from a source the Owner believes reliable. Present ground and subsurface conditions are documented by test boring logs included herein, however accuracy of this data is not guaranteed, and is furnished solely for the convenience of the Bidder. Use of this data is at Bidder's risk and no additional compensation will be granted because of the Bidder's lack of knowledge of the existing site.
2. Additional test borings and other exploratory operations may be conducted by a Bidder (at no cost to the Owner), provided the methods and operations are acceptable to the Owner.
3. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult appropriate utility owner immediately for directions. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair any damaged utility(s) to satisfaction of utility owner.
4. Visit the site prior to bidding; be familiar with actual conditions in the field. Extra compensation will not be allowed for conditions which could have been determined or anticipated by examination of the site, the Contract Drawings and the information available pertaining to existing soils, utilities and other site characteristics.
5. Maintain carefully, as established, temporary bench marks, monuments and other reference points and, if disturbed or destroyed by the Contractor, pay for replacement by a registered Engineer or Land Surveyor.
6. Locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of support and protection during earthwork operations.

1.06 QUALITY ASSURANCE

- A. The Contractor shall employ and pay for the services of a Registered Land Surveyor to layout the Work and locate and mark associated benchmarks (refer to Section 01 71 23 - Field Engineering).
- B. The Owner will employ and pay for the services of a soil testing and inspection service (Geotechnical Engineer) for quality control testing of the earthwork operations.
- C. The Owner's representative from the testing laboratory (Geotechnical Engineer) must be continually present during stripping, excavation, backfilling, and compaction operations. Services which will be performed by the testing laboratory are as follows:
 1. Inspect all excavations within areas to be paved prior to any filling to ensure that unsuitable and unstable soils have been completely removed.
 2. Test imported fill materials and aggregates prior to delivery to the site. This will consist of sieve analyses to determine the suitability of the materials for the intended use. Once the source has been approved, the materials being delivered to the project will be tested on a regular basis to aid in evaluating their uniformity.
 3. Inspect fill and backfill materials and operations, determine optimum use of various on-site soils, review and approve method of subcutting unsuitable soils.
 4. Take density tests as backfilling occurs to ensure that material is uniformly compacted to conform with the specifications. Compaction tests will be taken at an interval of at least one for every 400 cubic yards of fill placed in pavement areas, at maximum vertical intervals of 2 feet of fill placed.
 5. Observe proof roll. Make recommendations for areas that do not pass the proof roll test.
- D. Environmental Engineer's Responsibilities:
 1. Document and record characteristics, limits and elevations should contaminated materials be unearthed.
 2. Advise the Contractor as to the limits of required excavation and cover requirements.
 3. Provide guidance per Environmental Engineer's DRAP/CCP for the management and disposal of contaminated and potentially contaminated soil at the site.

- E. Contractor's Responsibilities:
1. Submit samples of proposed backfill and fill materials to the testing laboratory at least three days prior to placement for evaluation of their suitability and determination of the optimum moisture content and maximum dry density.
 2. Inform testing laboratory representative of proposed earthwork schedule at least 48 hours prior to commencing work. Earthwork operations which require inspection by testing laboratories shall not be performed unless the Geotechnical Engineer is present. Coordinate all earthwork activities with the testing laboratory.
 3. Provide fully loaded tandem axle dump truck for proof rolling operations and perform proof rolling in presence of the Geotechnical Engineer (as many times as necessary as determined by the Geotechnical Engineer to the satisfaction of the Geotechnical Engineer).

PART 2 - PRODUCTS

2.01 EARTH MATERIALS

- A. Pavement Areas
1. Fill shall be free of lumps, wood, topsoil, organic material, soft, frozen or other unsuitable material. The fill shall consist of approved on site non-organic soils or imported non-clayey sand having less than 25 percent of the particles by weight passing a #200 sieve.
- B. Topsoil
1. Topsoil shall be a fertile, friable, natural loam containing a liberal amount of humus and capable of sustaining vigorous plant growth.
 2. The pH value of the topsoil shall be between 5.5 and 7.5.
 3. Topsoil shall be obtained from naturally well-drained areas and shall be clean and reasonably free of subsoil, stones, clods of hard earth, plants or their roots and other extraneous matter. Buried organic soil or organic soil taken from wetland or hydric areas is not acceptable for use as topsoil.
 4. Topsoil obtained from stripping the site may be used provided it is tested and approved by the Environmental Engineer.
 5. Import topsoil shall be Topsoil Borrow meeting Mn/DOT 3877.2A. Import topsoil borrow as required to provide a minimum 6" depth of topsoil (after specified compaction).

PART 3 - EXECUTIONS

3.01 SPECIAL PRECAUTIONS

- A. Dewatering (**INCIDENTAL TO CONTRACT**)
1. Prevent surface water and subsurface (ground) water from flowing into excavations and from flooding the site and surrounding area.
 2. Do not allow water to accumulate in excavations. Remove water to prevent soil changes detrimental to stability of subgrades and foundations. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations. Groundwater shall be drawn down below the anticipated excavation bottom in advance of excavation.
 3. If the soils become disturbed and unstable, they shall be removed and replaced with drier compacted fill. Alternatively, under favorable weather conditions, the disturbed and / or unstable soils may be scarified, dried and recompacted back into place.
 4. Convey water removed from excavations and rain water to collecting or run-off areas. Establish and maintain temporary drainage ditches and other diversions outside excavation limits for each structure. Do not use trench excavations as temporary drainage ditches.
 5. Do not place fill or compacted fill in standing water or over softened soils.

- B. Stability of Excavations
1. Sidewalls of all excavations shall comply with the most current OSHA regulations and applicable local codes and ordinances. Shore and brace where adequate sloping is not feasible because of space restrictions or stability of material being excavated.
 2. Maintain slopes of excavations in safe condition until completion of backfilling.
 3. Soils on site may be sensitive to moisture and may be easily disturbed by construction traffic. Provide stabilization materials (sand, aggregate, hydrated lime, fly ash, etc.) to stabilize. Limit use of rubber tired equipment on subgrade. **Measures to protect subgrade from becoming unstable and maintaining stability of subgrade soils shall be provided. Subgrade stabilization will be incidental to the Contract. Subgrade stabilization shall be the responsibility of the Earthwork Contractor until the Stabilized Aggregate Base course is installed by the Paving Contractor.**
- C. Cold Weather Protection:
1. If site grading and construction takes place during cold weather, good winter construction practices shall be observed. All snow and ice shall be removed from cut and fill areas prior to additional grading. No fill, footings nor slabs shall be placed on soils which have frozen or contain frozen material. No frozen soils should be used as fill.
 2. Protect excavation bottoms against freezing when atmospheric temperature is less than 35° F.

3.02 LAYOUT

- A. The Contractor shall employ and pay for the services of a registered Engineer or Land Surveyor, acceptable to the Engineer / Architect, to stake and tape limits of construction, accurately locate pavements, curbing, utilities, and elevations, and establish temporary bench marks for use during construction (refer to Section 31 71 23 - Field Engineering).

3.03 EXCAVATIONS

- A. Excavate to the lines, grades and slopes shown on the Drawings.
- B. Provide temporary drainage where construction interferes with existing drainage.
- C. Excavate and remove all vegetation, topsoil, soft soils, loose soils, fill material, unsuitable soils, and soils with organic content within the upper three (3) feet of final subgrade elevation of all proposed pavement areas. Remove all topsoil and vegetation under paved areas. Remove any soft soils which are unsuitable for loads as directed by the Geotechnical Engineer.
- D. Excavations shall be oversized one foot beyond the outside edges of the back of curb (or edge of pavement, where no curbing is proposed), plus 1 foot horizontally for each foot of excavation below the pavement (1:1 oversizing).

3.04 COMPACTED FILL

- A. Prior to the placement of fill by the Contractor, the Geotechnical Engineer must inspect and approve the bottom of each excavation. Once approved, the exposed surfaces shall be scarified to a depth of not less than 6 inches, moistened or dried to within 2% of the soils optimum moisture content (ASTM D698).
- B. Fill shall not be placed on frozen ground, nor shall filling operations continue when the temperature is such as to permit the layer under placement to freeze.
- C. Fill shall not be placed in standing water or over softened soils.
- D. Soil clumps or slabs shall be broken up or disced to allow for proper compaction. Discing and compaction operations shall be approved by the Geotechnical Engineer.
- E. Deposit approved fill in uniform layers not exceeding 6-12 inches (loose) thickness (dependent upon review by the Geotechnical Engineer). Compact each layer with approved methods and equipment. Fill shall be placed within the specified moisture content range as approved by the Geotechnical Engineer.

- F. The fill material, when being compacted, shall contain the proper moisture content, as designated by the Geotechnical Engineer, for the specified compaction. The moisture shall be uniform throughout each layer.
- G. Manually operated vibratory plate compactors shall be used to compact fill and backfill placed within five feet from building foundation walls and retaining walls. Self propelled compactors shall only be used outside of this five foot limit.
- H. Spread, disk, or otherwise dry wet soils as required to achieve a uniform moisture content throughout the soil. Moistens soils when too dry to achieve the required moisture content.
- I. Scarify, remove, recompact or otherwise rectify all soft or yielding areas resulting from construction operations, rain, groundwater, or other sources at no additional cost to the Owner.
- J. If there are areas which cannot be compacted, the upper 2 feet of the resulting subgrade shall be scarified to a moisture content not more than 1 percent above optimum and compacted to a minimum of 100 percent Standard Proctor. If after scarifying the areas still cannot be compacted, the unstable materials shall be subexcavated to a depth of 3 feet and be replaced with materials which can be compacted.

3.05 COMPACTION DENSITY REQUIREMENTS

- A. Compaction of all fill and backfill shall meet or exceed the following percentages of standard Proctor density (ASTM D 698):
 - 1. 95% for backfill placed more than 3 feet below final pavement subgrades.
 - a. Moisture content: -1 to +3%
 - 2. 100% for backfill within upper 3 feet of all pavement subgrades.
 - a. Moisture content: $\pm 1\%$
 - 3. 90% below landscape areas.
 - a. Moisture content: $\pm 2\%$
- B. Tests falling below the specified density shall be cause for rejection of lift and will require further compacting or removal and recompacting at Contractor's expense until the specification requirements are met. Each lift must be approved before commencing with the next succeeding lift.

3.06 ROUGH GRADING

- A. The grades shown on the drawings are proposed finish grades. The Contractor shall grade to prescribed subgrade elevations, except landscaped areas which shall be graded to finish grade with approved topsoil.
- B. The Contractor shall be solely responsible for determining quantities of cut, fill and waste materials to be handled, and for amount of grading to be done in order to completely perform all work indicated on the Drawings. Import suitable material and export unsuitable / excess / waste material as required at no additional cost to the Owner.
- C. Provide surfaces free of debris and building materials. Complete rough grading by blading to reasonably smooth contours with neat, uniform transitions and slopes. Remove stones over 2" in diameter, branches and other vegetation. Ease new grades into surrounding existing grades without awkward or abrupt transitions.
- D. All surfaces shall be finished to such contour that they will not impound surface water (all areas shall be graded to drain). All curbing shall be backfilled flush with the top of curb.
- E. Rough grade tolerances are as follows:
 - 1. Unpaved areas: Not more than 0.15' above or below **finish** grade elevations shown on the drawings.
 - 2. Paved areas: Surfaces shall not vary by more than 0.10' above or below the **subgrade** elevations referenced to herein.
- F. The subgrade shall reflect the same grade (percent slope) as the finish grade to ensure a consistent depth of topsoil or pavement section.

- G. Provide temporary stabilization of all disturbed areas as required in Section 31 25 00.
- H. Protect newly graded areas from traffic and erosion. Repair and re-establish grades in settled, eroded and rutted areas to specified tolerances.
- I. Immediately prior to placement of the aggregate base, and in the presence of the Geotechnical Engineer, proof roll all subgrades of proposed pavement areas to detect signs of instability. Correct all unstable areas to the satisfaction of the Geotechnical Engineer.

3.07 SUBGRADE PREPARATION / FINISH GRADING OF PAVEMENT AREAS

- A. The Contractor shall compact and shape the subgrade for its entirety as may be necessary to produce, at the time the sand subbase or stabilized aggregate base is placed, the specified density and stability in the top 12 inches of the subgrade and the grades shown on the Drawings.
- B. The exposed surfaces shall be scarified to a depth of not less than 12 inches, moistened or dried to within the percentage of the soils optimum moisture content (ASTM D698) specified herein, and compacted to the specified density. Disc and dry soils as required to accomplish the specified moisture content. Moisture conditioning will be incidental to the Contract.
 - 1. Spread, disk, or otherwise dry wet soils as required to achieve a uniform moisture content throughout the soil. Moisten soils when too dry to achieve the required moisture content.
 - 2. Scarify, remove, recompact or otherwise rectify all soft or yielding areas resulting from construction operations, rain, groundwater, or other sources at no additional cost to the Owner.
 - 3. If there are areas which cannot be compacted, the upper 2 feet of the resulting subgrade shall be scarified to a moisture content not more than 1 percent above optimum and compacted to a minimum of 100 percent Standard Proctor. If after scarifying the areas still cannot be compacted, the unstable materials shall be subexcavated to a depth of 3 feet and be replaced with materials which can be compacted.
- C. Uniformly slope the subexcavation bottoms to coincide with the proposed surface grades. Blade subexcavation to a smooth, uniform surface prior to proof roll and subsequent subbases or stabilized aggregate base.
- D. Grade Tolerance: All areas to be paved shall be brought to within 0.06' (3/4 inch) of subgrade elevations and cross sections.
- E. Proof Roll for Pavement Areas:
 - 1. **ALL PROPOSED PAVEMENT AREAS SHALL BE TEST ROLLED IN ACCORDANCE WITH Mn/DOT 2111 SUBSEQUENT TO FINISH GRADING IN THE PRESENCE OF THE GEOTECHNICAL ENGINEER.**
 - 2. All proposed pavement subgrades shall be test rolled, using a heavy, rubber-tired vehicle immediately prior to placement of sand subbase or stabilized aggregate base. Proof roll shall occur no more than 48 hours before placement of subsequent courses. Proof roll shall be redone if precipitation falls on the subgrade between initial proof roll and placement of subsequent courses. Test rolling shall not be performed until the Geotechnical Engineer and Contractor mutually agree that the subgrade has been properly prepared and is acceptable for test rolling. The test rolling shall be performed by making 2 passes over each strip covered by the width of a tire. Unrolled areas between the tire paths shall not be wider than 12 inches. The roller shall be operated at a speed of not less than 2½ nor more than 5 miles per hour and in a pattern approved by the Geotechnical Engineer. Coordinate scheduling of proof roll with paving contractor.
 - 3. The required subgrade stability shall be such that during placement of the base, rutting and displacement does not occur. Maximum yield: 1" (measured from the top of the constructed subgrade to the bottom of the rut).
 - 4. If test rolling shows any area to be unstable (yielding or rutting at the time the roller passes over the grade of more than 1 inch, measured from the top of the constructed grade to the bottom of the rut), the Contractor shall, at his expense, scarify the area and aerate or add moisture to the soil as necessary, and recompact the soil to the extent it will be stable when retested by rolling. The Contractor shall furnish a device that will mark the surface of the subgrade where rutting or yielding occurs.
 - 5. Areas shall be reworked and retested to the satisfaction of the Geotechnical Engineer.

3.08 FINISH GRADING OF TURF AREAS

- A. Spread topsoil material to a minimum depth of 6 inches (after compaction) over all turf areas within grading limits, subsequent to installation of pavements and curbing. Complete grading of site and bring entire site to finish elevations shown on drawings.
 - 1. General turf areas shall be bladed smooth with a skid steer or similar light weight equipment.

- B. Compaction:
 - 1. Compact the subsoil and topsoil as necessary to prevent future settlement without inhibiting vertical drainage and subsequent turf establishment.
 - 2. If over compaction occurs (defined as a relative density above 90% Standard Proctor density), the Contractor shall scarify the soil to full depth of topsoil and regrade as required.

- C. Grade Tolerances are as follows:
 - 1. General turf areas: Not more than 0.08' (one inch) above or below finish grade elevations.

END OF SECTION 31 00 00

SECTION 31 25 00

EROSION CONTROL

PART 1 - GENERAL

1.01 APPLICABLE DOCUMENTS

- A. Bidding Requirements, Conditions of the Contract and pertinent portions of Sections in Division 00 and 01 of these Specifications apply to the Work of this Section.

1.02 SUMMARY

- A. Section Includes: Include labor, material, equipment, and accessories to complete the following Work:
1. Provide full implementation (installation, maintenance and removal) of all erosion control devices and procedures identified on the Drawings and noted herein.
 2. Provide all erosion control devices per the drawings and as may be required by Local or State regulations.
 3. Have erosion control devices inspected and approved by local authorities prior to commencement of earthwork operations.
 4. Provide maintenance of all erosion control devices until final vegetation is established.
- B. Related Sections:
1. Section 31 00 00: Earthwork
 2. Section 32 92 23: Sodding
- C. Schedule and Permits:
1. The Contractor shall prepare and submit to the Engineer for acceptance, his proposed schedule for accomplishment of the affected work, including a detailed description of all proposed erosion control measures.

1.03 SUBMITTALS

- A. In accordance with Section 01 33 23, submit the following information:
1. Submit a proposed schedule for implementation of erosion control devices and other items related to erosion and sediment control.
 2. Submit Erosion control maintenance logs on a weekly basis.

1.04 PROJECT CONDITIONS

- A. Environmental requirements: The Contractor shall protect adjacent properties and water resources from erosion and sedimentation damage throughout Work.

PART 2 - PRODUCTS

2.01 SILT FENCE

- A. Acceptable Manufacturers:
1. Webtec, Inc., Charlotte, North Carolina; "Z-Fence";
 2. Terra Tex SC, "EconoFence";
 3. Mirafi, "Silt Fence";
 4. Mirafi: FF-101 Orange Silt Fence;
 5. Or approved equal.

2.02 SEDIMENT CONTROL DEVICES AT STORM SEWER INLETS

A. Acceptable Products:

1. Wimco Top Slab™ Model RD 23 for use pre-curb and Curb and Gutter Model CG 23 for use following curb installation for catch basins with Neenah R-3067 or similar castings.
2. Wimco Top Slab™ Model RD 27 for use with Neenah R-2501 or similar castings.
3. Infracafe® Sediment Control Barrier, distributed by Royal Environmental Systems, Inc. SCB's shall be sized specifically for the structure and casting specified (Neenah R-3067 or similar castings or Neenah R-2501 or similar castings). SCB's shall be equipped with Frame and Perforated Shroud and shall be wrapped on the outside, covering the perforated wall only, with a geotextile sock.
4. Rock Log distributed by Brock White Company, St. Paul, MN (651) 647-0950. Rock Logs shall be used only for curb inlets after pavement (binder course or wear course) is installed or at existing inlets at paved areas. Rock logs shall consist of clean, open graded clear rock (1.5" diameter) encased in a geotextile fabric conforming to Specification 3886, Table 3886-1 for Machine Slice. Each log shall be approximately 5 inches in diameter loose packed in such a manner to allow forming to soil or inlet profiles 4, 6 or 8 feet in length. The sides of the geotextile log shall be either factory heat sealed or machine stitched with two rows of threads, conforming to Mn/DOT 3733.2D. Minimum installed thread strength shall equal the grab tensile strength of the geotextile fabric. The ends of the rock logs shall be closed with a 50 PSI zip tie, or heat sealed or sewn as per geotextile log sides.
5. Dandy Bag® or Dandy Bag II® distributed by Brock White Company, St. Paul, MN (615) 647-0950. Dandy Bag shall be used only for curb inlets after pavement (binder course or wear course) is installed or at existing paved areas.
6. InfraSafe® Debris Collection Device by Royal Environmental Systems, Inc., distributed by Ess Brothers, 9350 County Road 19, Corcoran, MN 55357 . DCD's shall be sized specifically for the structure and casting specified (Neenah R-3067 or similar castings or Neenah R-2573 or similar castings). Provide filter bags and ties for complete installation.
7. Or approved equal.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Review the plans related to erosion control.
- B. Notify the Engineer of deficiencies or changes in the erosion control plans required by current site conditions. Revisions to the plan shall be made as determined by the Engineer.

3.02 PHASING OF THE WORK

- A. Schedule and conduct operations so as to minimize erosion of soils and to prevent sedimentation of Surface Waters of the State (surface waters include curb and gutter, pavements, storm sewer, swales, or other similar storm water conveyance devices).
- B. Construction of drainage facilities, turf establishment items, and other contract work which will contribute to the control of erosion and sedimentation shall be carried out concurrently with earthwork operations or as soon thereafter as practicable.

3.03 CONSTRUCTION SCHEDULE

- A. The Contractor shall prepare and submit to the Engineer for acceptance, the Contractor's proposed schedule for accomplishment of the affected work, including a detailed description of all proposed erosion control measures.
- B. No work shall be started in the affected areas until the schedule and proposed methods of operation have been reviewed and approved by the Engineer.

3.04 LIMITATION OF WORK AREA

- A. The Engineer will have authority to limit the surface area of erodible soil that can be exposed to possible erosion at any one time, without having the permanent erosion control features completed and operative.
- B. The Contractor shall incorporate the erosion control features into the work at the earliest practicable time, and provide all additional temporary control measures as may be needed to correct conditions developing during construction.

3.05 EROSION AND SEDIMENT CONTROLS - STABILIZATION PRACTICES

- A. Stabilize denuded areas and stockpiles within the following number of days of last construction activity in all areas:
 - 1. All areas shall be stabilized within 14 days.
 - 2. Temporary soil stockpiles shall be treated with appropriate erosion control measure, including silt fence and temporary seeding when stockpiles are left inactive for periods longer than 7 days.
- B. Temporary Stabilization:
 - 1. Stockpiles and disturbed portions of the site where construction activity temporarily ceases for the time frames noted above shall be stabilized with a temporary seed and mulch according to the following:
 - a. All areas of bare soil exposed to possible erosion shall be shaped to drain with minimum potential for erosion. The disturbed areas shall then be seeded with perennial ryegrass and annual wheat at a rate of 10 pounds per acre (0.25 lbs./1,000 sq. ft.) and 20 pounds per acre (0.50 lbs./1,000 sq. ft.) respectively, then and covered with straw mulch at a rate of 4,000 pounds per acre, disc anchored.

3.06 INSTALLATION OF EROSION CONTROL DEVICES

- A. Silt Fence
 - 1. Silt fence shall be installed according to Mn/DOT spec 3886. Once installed, provide continual maintenance as identified in the SWPPP Narrative.
 - 2. Following final turf and vegetation establishment, silt fence and posts shall be completely removed and the trench backfilled and restored with vegetation.
- B. Sediment Filter at Storm Sewer Inlets
 - 1. Wimco Products:
 - a. Wimco products shall be installed in accordance with manufacturer's recommendations.
 - 2. InfrSAFE SCB:
 - a. InfrSAFE products shall be installed in accordance with manufacturer's recommendations.
 - 3. InfrSAFE DCD:
 - a. InfrSAFE products shall be installed in accordance with manufacturer's recommendations.
 - 4. Rock Log:
 - a. Rock log shall be placed on the bituminous pavement surface, butted up to the curbing. The ends of the logs shall be butt-jointed as needed to perform necessary sediment control around inlets.
 - 5. Dandy Bags:
 - a. Dandy Bag products shall be installed in accordance with manufacturer's recommendations.
 - 6. Following final turf and vegetation establishment, sediment filter at storm sewer inlets shall be completely removed.

3.07 MAINTENANCE

- A. All erosion control devices shall remain in place until other means of permanent control such as turf establishment and paving have taken place. The Contractor shall maintain these devices throughout their temporary life and to remove them and when so instructed by the Engineer. Removal of erosion control devices includes restoration of affected areas. Maintenance and removal will be considered incidental to the Contract and no additional compensation shall be made therefore. Silt fences which have washed out shall be reinforced with additional stakes and backed by snow fence to reduce the possibility of future washouts.

- B. Provide maintenance for all devices as follows:
1. Erosion control devices shall be cleaned when sediment reaches 1/3 the height of the erosion control device, within 24 hours.
 2. Repairs or replacements to all erosion control devices shall occur within 24 hours.
 3. Tracked sediment on paved areas from construction vehicles (including paved areas on the construction site) shall be removed within 24 hours of discovery.

3.08 CONCRETE TRUCK WASHOUT AREAS

- A. All liquid and solid wastes generated by concrete washout operations shall be contained in a leak proof containment facility or impermeable liner. A compacted clay liner that does not allow washout liquids to enter ground water is considered an impermeable liner. The liquid and solid wastes must not contact the ground and there must not be runoff from the concrete washout operations or areas. Liquid and solid wastes shall be disposed of properly and in compliance with MPCA regulations. A sign shall be installed adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities.

3.09 RESTORATION

- A. Control of drainage and erosion shall include restoration work as the Engineer considers necessary in preventing siltation of public waters.
- B. Restoration shall include cleanup, shaping, replacement of topsoil, and establishment of vegetative cover on all disturbed areas where water pollution potentials have been increased due to the Contractor's operations.

3.10 COMPENSATION

- A. All expenses related to complying with the provisions hereof shall be borne by the Contractor with no direct compensation being made therefore.

END OF SECTION 31 25 00

SECTION 32 12 00

ASPHALTIC CONCRETE PAVING

PART 1 - GENERAL

1.01 APPLICABLE DOCUMENTS

- A. Bidding Requirements, Conditions of the Contract and pertinent portions of Sections in Division 00 and 01 of these Specifications apply to the Work of this Section.

1.02 SUMMARY

- A. This work shall consist of the following:
1. Constructing a stabilized aggregate base on the prepared subgrade in accordance with MN/DOT 2211.
 2. Constructing bituminous binder and wear courses in accordance with MN/DOT 2350 / 2360.
 3. Provide stabilized aggregate base under curb and gutter.
- B. Related Sections:
1. Section 31 25 00: Erosion Control
 2. Section 32 13 13: Exterior Concrete Work

1.03 REFERENCES

- A. Reference Standards:
1. State Highway Department Standards: Mn/DOT Spec shall mean the Minnesota Department of Transportation "Standard Specification for Highway Construction", latest edition.
 - a. Spec 2331, Plant-Mixed Bituminous pavement.
 - b. Spec 2350/2360, Plant-Mixed Asphalt Pavement.
 - c. Spec 2357, Bituminous Tack Coat.
 - d. Spec 3138, Aggregates for Surface and Base Courses.
 - e. Spec 3139, Grade Aggregate for Bituminous Mixtures.
 2. Federal Highway Administration Standards: AASHTO Spec and AASHTO tests shall refer to American Association of State Highway and Transportation Official's (AASHTO) "Standard Specifications for Transportation and Methods of Sampling and Testing", latest edition.
 - a. AASHTO T166, Standard Method of Test for Bulk Specific Gravity of Compacted Hot-Mix Asphalt Using Saturated Surface-Dry Specimens.
 - b. AASHTO T209, Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures.

1.04 SUBMITTALS

- A. Certification of Materials: Bituminous mix plant shall have, on file, a report by an approved testing laboratory certifying that materials are in accordance with Specification requirements.
- B. Job-Mix Design: Bituminous mix plant shall have, on file, a report by an approved testing laboratory that indicates the proportions of materials used in each type of bituminous course being provided and temperature of mix.
- C. Samples: Provide samples of materials for laboratory testing and job-mix design.
- D. During paving, provide hot mix samples to the Geotechnical Engineer for determination of the actual bituminous mixture properties during production.
- E. Certificates: Provide certificates, signed by the asphalt concrete producer and Contractor, certifying that materials comply with Specification requirements.

1.05 QUALITY ASSURANCE

- A. Contractor's Qualifications: Construction of bituminous paving, including stabilized aggregate base, shall be done by a responsible Paving Contractor having necessary equipment, plant, and not less than 10 years experience in performing Work similar to that included under this Contract.
- B. Governing Codes: Work of this section occurring on public property shall be constructed in accordance with laws, ordinances, rules, regulations, and orders of any public authority having jurisdiction. Where such work is required to be constructed in a manner differing from the Contract Documents, Contractor shall notify Engineer before proceeding with Work.
- C. Qualifications of Asphalt Concrete Producer: Use only materials which are furnished by a bulk asphalt concrete producer regularly engaged in production of hot-mix, hot-laid asphalt concrete. **The plant shall be a Mn/DOT certified plant.**
- D. The Contractor shall employ and pay for the services of a registered Engineer or Land Surveyor, acceptable to the Engineer/Architect, to stake and tape limits of curb and gutter, pavement limits, and paint striping.
- E. In addition to other specified conditions, comply with the following minimum requirements:
1. The Owner will employ and pay for the services of a testing and inspection service (Geotechnical Engineer) for quality control testing.
 2. The Geotechnical Engineer will obtain hot-mix asphalt samples behind the paver, prior to compaction, for purposes of determining maximum specific gravity of bituminous pavement in accordance with AASHTO T209.
 3. The Geotechnical Engineer will test in-place asphalt concrete courses for compliance with requirements for density, thickness and surface smoothness.
 4. Provide final surfaces of uniform texture, conforming to required grades and cross-sections.
 5. Take not less than one (1) - 4" diameter pavement specimens for each completed course, from locations as directed by Geotechnical Engineer. Provide specimens to the Geotechnical Engineer.
 6. Repair holes from test specimens as specified for patching defective work.
- F. Density Requirements:
1. Geotechnical Engineer will determine maximum specific gravity (G_{mm}) of asphalt materials in accordance with AASHTO T209.
 2. Minimum required base and wear course densities will be as stated in MN/Dot Spec 2360, Table 2360.6-B2. In place pavement density of each course shall be determined from pavement specimens by the Geotechnical Engineer in accordance with AASHTO T166.
 3. Payment for placed asphalt shall be in accordance with MN/Dot Spec 2360, Table 2360.6-B4A except where modified here within:
 - a. In place pavement with specific gravity less than 89.0% of maximum shall be removed and replaced by the Contractor at the Contractor's expense.
- G. Thickness: In-place compacted thicknesses will not be acceptable if exceeding following allowable variation from thickness shown on Drawings.
1. Binder Course: 1/2", +/-
 2. Wear Course: 1/2", +/-
 3. **THE TOTAL THICKNESS OF ANY BITUMINOUS PAVEMENT SHALL NOT BE LESS THAN THE AGGREGATE DIMENSION OF THE BITUMINOUS COURSES SHOWN ON THE DRAWINGS.** Bituminous pavement not meeting the minimum overall thickness referenced above shall be removed and replaced at the Contractor's expense.

- H. Surface Smoothness:
1. Test finished surface of each asphalt concrete course for smoothness, using a 10' straight edge applied parallel to and at right angles in Centerline of paved areas.
 2. Check surfaced areas at intervals directed by Engineer.
 3. Surfaces will not be acceptable if exceeding the following:
 - a. Binder Course: 1/4" in 10'
 - b. Wear Course: 3/16" in 10'
- I. Ponding: Surfaces will not be acceptable if ponding water exceeds 3/16" as determined by the Engineer. Remove and replace all unacceptable ponding pavement areas at no additional cost to the Owner.
- J. The Contractor will be responsible for all drainage of the finished surface. Any "bird baths" will be considered unacceptable and shall be remedied by the Contractor at his expense to the satisfaction of the Owner.

1.06 SITE CONDITIONS

- A. Weather Limitations:
1. Apply bituminous tack coat only when the ambient temperature in the shade is at least 50° F. and when the temperature has not been below 35 F. for 12 hours immediately prior to application.
 2. Do not apply when the base surface is wet or contains an excess of moisture which would prevent uniform distribution and the required penetration.
 3. Construct asphalt concrete surface course only when atmospheric temperature is above 40° F., when the underlying base is dry, and when weather is not rainy.
 4. Refer to "Minimum Placement Temperature Chart" prepared by the National Asphalt Pavement Association for Minimum Bituminous Placement Temperatures.
 5. Paving shall not take place when, in the opinion of the testing laboratory, the weather or surface conditions are considered unfavorable.
- B. Grade Control: Establish and maintain the required lines and grades, including crown and cross-slope, for each course during construction operations.
- C. Protection: Protect grass, vegetation, concrete work, building and other work adjacent to paving, with building paper or other suitable material, so that stains of bitumen shall not reach these surfaces.
- D. Traffic Control:
1. Maintain vehicular and pedestrian traffic during paving operations as required for other construction activities.
 2. Provide flagmen, barricades, warning signs, and warning lights for movement of traffic and safety and to cause the least interruption of work.
- E. Coordination and Responsibility
1. Coordinate pavement construction with casting adjustments.
 2. Coordinate installation of Stabilized Aggregate Base with Earthwork Contractor. Stabilized Aggregate Base shall not be installed until proof roll is conducted by the Earthwork Contractor and approved by the Geotechnical Engineer. Once approved, stability of the subgrade soils shall be the responsibility of the Asphalt Paving Contractor. Measures to protect subgrade from becoming unstable and maintaining stability of subgrade soils shall be provided. Subgrade stabilization will be incidental to the Contract. If unstable areas are encountered, provisions for testing and corrective action outlined in Section 31 00 00 Earthwork shall be strictly adhered to by the Paving Contractor.
 3. Coordinate installation of Stabilized Aggregate Base with Curbing Contractor. Stabilized Aggregate Base under proposed curbing shall be installed by the Paving Contractor.
 4. Coordinate installation of Stabilized Aggregate Base with Electrical contractor for installation of conduits, light pole bases and other electrical items.

1.07 REQUIREMENTS

- A. Job-Mix Criteria:
1. Provide job-mix formulas for each required asphalt-aggregate mixture.
 2. Establish a single percentage of aggregate passing each required sieve size, a single percentage of asphalt cement to be added to aggregate, and a single temperature at which asphalt concrete is to be produced.
 3. Comply with the mix requirements of the Minnesota Department of Transportation (Mn/DOT) standards.
 4. Maintain material quantities within allowable tolerances of the governing standards.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Asphalt Binder Course: Materials and methods of preparation and construction shall meet requirements of Mn/DOT Spec 2350 / 2360.
1. Binder Course Mix Design: LV NW 3 50 30 B
- B. Asphalt Wearing Course: Materials and methods of preparation and construction shall meet requirements of Mn/DOT Spec 2350 / 2360.
1. Wear Course Mix Design: MV WE 4 50 35 B
- C. Bituminous Tack Coat: Tack coat shall be CSS-1H or CRS-2 cationic emulsified asphalt diluted 50/50 with clean water. Tack coat shall meet requirements of Mn/DOT Spec 2357.
- D. Stabilized Aggregate Base: Aggregate shall be 100% crushed product meeting the requirements of Mn/DOT Spec 3138, Class 5 gradation. Recycled bituminous may be used, limited to asphalt content specified in Mn/DOT Spec 3138 Class 7. All materials shall be tested and approved by the Geotechnical Engineer prior to construction.

PART 3 - EXECUTION

3.01 PREPARATION PRIOR TO PAVING

- A. Proof Roll:
1. Refer to Section 31 00 00 for proof roll requirements. Stabilized Aggregate Base shall not be installed until the subgrade is reviewed, tested and approved.
 2. Do not begin paving work until such conditions have been corrected and are ready to receive paving. **ONCE SUBGRADE IS ACCEPTED BY THE PAVING CONTRACTOR, COST OF SUBGRADE CORRECTION, IF REQUIRED, WILL BE BORNE BY THE PAVING CONTRACTOR.**
- B. Loose and Foreign Material:
1. Remove loose and foreign material from compacted sub-base surface immediately before application of paving.
 2. Do not displace sub-base material.
- C. Stabilized Aggregate Base: In accordance with Mn/DOT 2211, construct aggregate base to the thickness shown on the Drawings. Extend aggregate base to one foot beyond back of curbs, where applicable. Aggregate base shall be compacted to 100% Standard Proctor (ASTM D698).
- D. Tack Coat:
1. Apply to contact surfaces of previously constructed asphalt concrete or Portland cement concrete and similar surfaces.
 2. Apply at rate of 0.05 to 0.15 gal. per sq. yd. of surface.
 3. Apply tack coat by brush to contact surfaces of curbs, gutters, manholes, and other structures projecting into or abutting asphalt concrete pavement.
 4. Allow surfaces to dry until material is at condition of tackiness and to receive pavement.

3.02 PAVING

A. General Requirements

1. Contractor shall prepare the site to receive the subsequent improvements shown on Drawings and outlined herein.
2. Remove loose and foreign materials from compacted surfaces immediately before application of paving.
3. Do not displace subbase material. Uniformly grade all ruts and ridges prior to installation of Stabilized Aggregate Base to provide uniform material thickness.
4. Construct bituminous binder and wear courses with self-propelled power operated paving equipment. The paver shall be equipped with a heated, adjustable screed.
5. Unless otherwise directed, begin placing at the high side of the section on one-way slope. After first strip has been placed and rolled, place succeeding strips.
6. Complete binder courses for a section before placing wear courses.
7. Place mixture in as continuous an operation as practicable.
8. Hand Placing:
 - a. Spread, tamp and finish mixture using hand tools in areas where machine spreading is not possible, as acceptable to Engineer.
 - b. Place mixture at a rate that will insure handling and compaction before mixture becomes cooler than acceptable working temperature.
9. Joints:
 - a. Gradually make joints between old and new pavements, or between successive days' work, to ensure a continuous bond between adjoining work.
 - b. Construct joints to have same texture, density and smoothness as adjacent sections of asphalt concrete course.
 - c. Clean contact surfaces free of sand, dirt, or other objectionable material and apply tack coat.
 - d. Offset transverse joints in succeeding courses not less than five feet.
 - e. Cut back edge of previously placed course to expose an even, vertical surface for full course thickness.
 - f. Offset longitudinal joints in succeeding courses not less than 6".
 - g. When the edges of longitudinal joints are irregular, honeycombed, or inadequately compacted, cut back unsatisfactory section to expose an even, vertical surface for full course thickness.

B. Asphalt Binder Course:

1. General Requirements: Construct an asphalt binder course with power operated paving equipment designed for paving. In accessible and small areas may be placed by hand. Place at a thickness so that when compacted it will be in accordance with indicated grade, cross-section, finish thickness, and density indicated.
2. Apply tack coat to all vertical surfaces of existing concrete or bituminous which will be in contact with new pavement. Apply emulsion diluted with 50/50 with clean water at a rate of 0.15 to 0.25 gallons per square yard.
3. Construct an asphalt binder course over the previously placed stabilized aggregate base course. Thickness shall be as shown on the Drawings.
4. Compact binder course as outlined herein.

C. Asphalt Wearing Course:

1. General Requirements: Construct an asphalt wearing course with power operated paving equipment designed for paving. Inaccessible and small areas may be placed by hand. Place at a thickness so that when compacted it will be in accordance with indicated grade, cross-section, finish thickness, and density indicated.
2. Apply tack coat to all vertical surfaces of existing concrete or bituminous which will be in contact with new pavement. Apply tack coat to previously installed binder course. Apply emulsion diluted with 50/50 with clean water at a rate of 0.15 to 0.25 gallons per square yard.
3. Construct an asphalt wearing course over the previously paced binder course. Thickness shall be as shown on the Drawings.
4. Compact wearing course as outlined herein.

3.03 COMPACTING THE MIX

A. General Requirements

1. Breakdown and second rolling shall be accomplished by a self-propelled, steel-wheel type, tandem roller weight not less than eight tons and exerting a compression of not less than 250 pounds per inch on the rear rollers. During break-down rolling, vibratory rollers shall operate at 8 to 10 impacts per foot.
2. Provide sufficient number of rollers to obtain the minimum required pavement density of 95% of the recorded laboratory specimen density.
3. Begin rolling operation as soon after placing when the mixture will bear weight of roller without excessive displacement.
4. Roller must be properly moistened, must operate continually and not stand on newly placed mixture.
5. Do not permit heavy equipment, including rollers to stand on finished surface before it has thoroughly cooled or set.
6. Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.
7. Start rolling longitudinally at extreme lower side of sections and proceed toward center of pavement. Roll to slightly different lengths on alternate roller runs.
8. Do not roll centers of section first under any circumstances.

B. Breakdown Rolling (Binder and Wearing Courses)

1. Accomplish breakdown or initial rolling immediately following rolling of transverse and longitudinal joints and outside edge.
2. Operate rollers as close as possible to paver without causing pavement displacement.
3. Check crown, grade, and smoothness after breakdown rolling.
4. Repair displaced areas by loosening at once with lutes or rakes and filling, if required, with hot loose material before continuing rolling.

C. Second Rolling (Binder and Wearing Courses)

1. Follow breakdown rolling as soon as possible, while mixture is hot and in condition for compaction.
2. Continue second rolling until mixture has been thoroughly compacted.

D. Finish Rolling (Wearing Courses)

1. A pneumatic tired roller shall be used for finish rolling. Pneumatic tired rollers shall be capable of exerting a pressure of not less than 200 pounds per inch of rolling width.
2. Perform finish rolling while mixture is still warm enough for removal of roller marks.
3. Continue rolling until roller marks are eliminated and course had attained specified density.
4. Depression or high areas which develop during rolling shall be corrected to produce a surface with no variations greater than 1/8 inch as measured by a ten-foot straight edge. Roller marks shall be rolled-out to provide smooth surface, however over compaction shall require removal and replacement of the area.

3.04 PATCHING

- A. Remove and replace defective/unacceptable areas.
- B. Remove deficient areas for full depth of course.
- C. Cut sides perpendicular and parallel to direction of traffic with edges vertical.
- D. Apply tack coat to exposed surfaces before placing new asphalt concrete mixture.
- E. Cut-out and fill with fresh, hot asphalt concrete.
- F. Compact by rolling to specified surface density and smoothness.
- G. Infrared thermal patching may be used only if pre-approved by the Engineer.

3.05 CLEANING

- A. Cleaning: After completion of paving operations, clean surfaces of excess or spilled asphalt materials to the satisfaction of Architect/Engineer.

3.06 PROTECTION

- A. After final rolling, do not permit vehicular traffic on asphalt concrete pavement until it has cooled and hardened and in no case sooner than 6 hours.
- B. Provide barricades and warning devices as required to protect pavement and the general public.
- C. Cover openings of structures in the area of paving until permanent coverings are placed.

END OF SECTION 32 12 00

SECTION 32 13 13

EXTERIOR CONCRETE WORK

PART 1 - GENERAL

1.01 APPLICABLE DOCUMENTS

- A. Bidding Requirements, Conditions of the Contract and pertinent portions of Sections in Division 00 and 01 of these Specifications apply to the Work of this Section.

1.02 SUMMARY

- A. Section Includes: Include labor, materials, equipment, and accessories to provide the following work:
 - 1. Provide cast-in-place concrete as follows:
 - a. Provide concrete curb and gutter.
 - 2. Provide expansion joint material.
 - 3. Provide formwork for cast-in-place concrete.
 - 4. Provide concrete cylinders for testing of cast-in-place concrete.
- B. Related Work By Owner:
 - 1. Concrete Tests: The Owner will provide concrete testing services performed by a testing laboratory, except where test fails, Contractor shall correct the failure and pay costs for retesting until approved by testing laboratory inspector and Owner.
- C. Work not included in this Section:
 - 1. Miscellaneous pad / slabs for electrical equipment.
 - 2. Stabilized aggregate base under curb and gutter and curb outlet. Refer to Section 32 12 00.

1.03 REFERENCES

- A. American Concrete Institute (ACI):
 - 1. ACI 301, Specifications For Structural Concrete For Buildings
 - 2. ACI 318, Building Code Requirements For Reinforced Concrete
- B. American Society For Testing and Material (ASTM):
 - 1. ASTM A185, Standard Specification for Steel Welded Fabric, Plain, for Concrete Reinforcements
 - 2. ASTM A615, Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
 - 3. ASTM C33, Standard Specification for Concrete Aggregate
 - 4. ASTM C94, Standard Specification for Ready-Mix Concrete
 - 5. ASTM C150, Standard Specification for Portland Cement
 - 6. ASTM C260, Standard Specification for Air-Entraining Admixtures for Concrete
- C. Concrete Reinforcing Steel Institute (CRSI):
 - 1. CRSI 63, Recommended Practice for Placing Reinforcing Bars

1.04 SUBMITTALS

A. Quality Control Submittals:

1. Contractor Submittal Requirements:
 - a. Submit representative samples of each type of aggregate proposed to be used on this Project to testing laboratory for testing and for use in concrete mix.
 - b. Submit representative samples of each type of cement proposed to be used on this Project to testing laboratory for use in concrete mix.
 - c. Prepare concrete test cylinders for testing by Owner's testing laboratory as specified under Field Quality Control in Part 3 of this Section.
 - d. Submit Design Mix For Approval: Testing laboratory shall submit copies of reports of aggregate testing and of concrete mix designs for approval. Submit copies not less than 14 days before start of concrete installation. Do not start concrete installation until aggregate test reports have been reviewed and concrete mix designs approved.

PART 2 - PRODUCTS

2.01 CONCRETE MATERIALS

- A. Portland Cement: ASTM C150, Type I or Type III
- B. Aggregate:
 1. Applicable Standard: ASTM C33
 2. Maximum Nominal Size of Course Aggregate: 3/4 inch
- C. Water: Clean, potable, and free of deleterious amounts of acids, alkalies, and organic materials.
- D. Concrete Admixtures:
 1. Air-Entraining Admixture:
 - a. Applicable Standard: ASTM C260
 - b. Acceptable Manufactures: As follows or approved equal:
 - 1) The Euclid Chemical Company, "Air-Mix"
 - 2) Master Builders, Inc., "MBR-VR"
 - 3) Sika Chemical Corporation, "Sika AEA"
 - 4) General Resource Technology: "Polychem AE"
 2. Entrained Air: Concrete exposed to weather shall be air-entrained. Proportions of entrained air, as determined by ASTM C138, ASTM C173 or ASTM C231, shall be 5 to 7 percent by volume for concrete with 3/4-inch maximum nominal size coarse aggregate.
 3. Calcium Chloride: Not permitted.

2.02 CONCRETE CURING MATERIALS

- A. Plastic Film Curing Membrane: 4 mil thick polyethylene sheeting, complying with ASTM C171 and Product Standard PS17. Use white for exterior warm weather applications. Use either white or black for exterior cold weather applications.

- B. Liquid Curing Material: (at concrete surfaces)
 - 1. Liquid membrane, resin rubber copolymer meeting ASTM C309, Type 1, Class A. Do not apply to the interface of channels to be caulked.
 - 2. Acceptable Manufacturers - No Substitutes:
 - a. Rez-Seal by the Euclid Chemical Co.
 - b. MB429 by Master Builders
 - c. Sonneborn Kure-N-Seal
 - d. Dekote by W. R. Grace Co.
 - e. Maxiseal by Set Products
 - f. J22 Acrylic Cure by Dayton Superior
 - g. Prokrete Cure-N-Seal 30
 - 3. Do not use curing material less than one month before first anticipated major snowfall (3" or more).

2.03 CONCRETE QUALITY, STRENGTH AND PROPORTIONS

- A. Type and Strength: Concrete shall have a minimum comprehensive strength, in place, at 28 days as follows:
 - 1. Concrete Exposed to Weather: 3,900 psi.
- B. Slump: Concrete slump shall be as determined by ASTM C143 and shall be as follows:
 - 1. Curb and Gutter: 1 to 2 inches.
- C. Water-Cement Ratio: Concrete exposed to weather shall have a water-cement ratio of not more than 0.45.
- D. High-Early Strength Cement: Contractor may use Type III Portland cement to produce high-early strength concrete. Adding additional amounts of Type I Portland cement to produce high-early strength concrete will not be permitted.
- E. Brand of Cement: Use only 1 brand of Portland cement.
- F. Workability: Concrete shall be of a consistency which will fill forms without voids or honeycombs, completely embed and bond to reinforcing without permitting materials to separate, and not promote excess water to collect on surface.

2.04 FORM MATERIALS

- A. General Requirements For Form Materials:
 - 1. Lumber or plywood forms as appropriate for application.
 - 2. Thoroughly clean and remove surface irregularities from forms to be reused.
- B. Lumber Forms: Surfaced 4 sides (S.S.)

2.05 MISCELLANEOUS MATERIAL

- A. Expansion Joint Material:
 - 1. Applicable Standards:
 - a. Federal Specifications HH-F-341E, Type 1
 - b. ASTM D1751
 - 2. Description: Composed of fibers of cellular nature bonded together with bituminous binder with sheets saturated in asphalt.
 - 3. Acceptable Manufacturer's: As follows or approved equal:
 - a. Celotex Corporation, "Flexcell"
 - b. Philip Carey Company, "Elastite"
 - c. W.R. Meadows Company, "Sealtight Fibre Expansion Joint"
 - d. North Central, "Fibre Expansion Joint Filler"

PART 3 - EXECUTION

3.01 FIELD QUALITY CONTROL

- A. Slump Tests:
1. Test Procedure: Maintain a slump cone on job site during concreting operations. Conduct slump tests in accordance with ASTM C143.
 2. Reports: Report results of each slump test to Architect.
- B. Compression Tests of Concrete Cylinders:
1. Cost Responsibility for Tests: Contractor shall have concrete test cylinders tested by the Owner's testing laboratory and shall pay cost for making these samples. Make test cylinders in accordance with the "Standard Method of Making and Curing Concrete Compression and Flexure Test Specimens in the Field" (ASTM C31).
 2. Frequency of Testing: Take 2 sets of test cylinders for every important concrete placement and not less than 2 sets of test cylinders per 50 cubic yards of concrete. The first set of cylinders shall be considered control cylinders and shall be laboratory cured at 70 degrees F of the control set; 1 cylinder shall be tested at 7 days, 1 at 28 days, and the third cylinder shall be tested only if the 28 day cylinder failed. The second set of cylinders shall be job cured and used to determine when forms and shoring may be removed. The first of these cylinders shall be tested at 7 days and the other 2 cylinders tested only if required.
 3. Number of Tests Per Set: Each set of test cylinders shall consist of 3 concrete test cylinders, 6 inches by 12 inches, and each set shall be considered as 1 test. Cylinders in each set shall be taken from the same batch of concrete. Note date, location, and concrete slump on each cylinder made.
 4. Location of Making Cylinders: Make concrete test cylinders at discharge end of chute, slide or pipe and not at truck or mixer.
 5. Strength Requirements: The strength level of the concrete will be considered satisfactory so long as the averages of all sets of 3 consecutive strength test results equal or exceed the specified strength f_c' and no individual strength test result falls below the specified strength f_c' by more than 500 psi.
 6. Compression Test Failure: Failure of concrete compression tests to meet specified strength shall require a load test or test cores at Contractor's expense. Failure to meet required live and dead loads or meet strength requirements of cores shall constitute rejection or consideration for rejection by Engineer. Cost of measures to make work satisfactory shall be paid for by the Contractor.

3.02 INSTALLATION OF FORMWORK

- A. Inspection: Examine subgrade and conditions under which concrete formwork is to be performed.
- B. Correction of Deficiencies: Do not proceed with work until unsatisfactory conditions have been corrected.
- C. Formwork Design Requirements: Design, support, brace, and maintain formwork to safely support loads that will be applied.
- D. Form Construction: Construct forms in accordance with ACI 301, to the sizes, lines, and dimensions shown and as required to obtain accurate alignment, location, and grades. Level and plumb work in finished structures.

3.03 PREPARATION BEFORE PLACING CONCRETE

- A. General Requirements: Before concrete placement, formwork shall be completed, reinforcement shall be secured in place, and embedded items shall be positioned.
- B. Cleaning Equipment: Remove hardened concrete and foreign materials from inner surfaces of conveying equipment.
- C. Cleaning Forms: Remove ice, water, wire, and other debris from forms and excavations before placing concrete.
- D. Preparation of Subgrades: Sprinkle semiporous subgrades sufficiently to eliminate suction just prior to placing concrete. Do not place concrete on frozen ground.

3.04 CONVEYING CONCRETE

- A. General Requirements: Handle concrete from mixer to place of final deposit as rapidly as practical by methods which shall prevent segregation or loss of ingredients and in a manner which shall ensure that concrete quality is maintained.

3.05 PLACING CONCRETE

- A. Placing Curbs and Gutter:
 - 1. Contraction Joints: Provide contraction joints 10 feet on center. Form joints by using oiled steel plates. Remove plates as soon as concrete has set. Rub edges of joints smooth with a jointing tool. Seal joints with hot poured concrete joint sealer.
 - 2. Expansion Joints: Provide expansion joints a maximum of 60 feet on center. Rub edges of joints smooth with a jointing tool. Fill joints with ½-inch joint filler material.
 - 3. Subgrade: Build curbs on compacted granular stabilized base material specified for beneath bituminous paving.
 - 4. Slip-Form Construction: Mechanical curb machines may be used to place curb and gutter using an approved extrusion machine that will produce a finished curb meeting the standards, workmanship, and appearance that would be achieved using metal forms. The same tolerances which apply using metal forms shall apply to work done with curb machines.

3.06 CONSOLIDATING CONCRETE

- A. General Requirements: Consolidate concrete by vibrating, spading, rodding or forking so that concrete is thoroughly worked around reinforcement, around embedded items, and into corners of forms to eliminate air or stone pockets which may cause honeycombing, pitting or planes of weakness.

3.07 FINISHING CONCRETE

- A. Curb and Gutter: Fill cavities with mortar and finish edges with an edging tool immediately after removal of forms and divider plates. Trowel exposed face to a smooth, uniform surface and then brush top and face lightly.

3.08 CURING CONCRETE

- A. Curing Procedure: Cure concrete by plastic film curing membrane or liquid curing compound method

3.09 CLEANUP

- A. Remove all form materials, excess joint materials, concrete spoils and excess concrete from the site.

END OF SECTION 32 13 13

SECTION 32 92 23

SODDING

PART 1 - GENERAL

1.01 APPLICABLE DOCUMENTS

- A. Bidding Requirements, Conditions of the Contract and pertinent portions of Sections in Division 00 and 01 of these Specifications apply to the Work of this Section.

1.02 SUMMARY

- A. Section Includes: Include labor, materials, equipment, and accessories to provide the following Work:
1. Provide fine grading and soil preparation for lawn planting by tilling, removing extraneous matter, and bringing soil to a smooth grade. Areas to receive lawn planting shall have a top soil cover and be brought to finish grade under Section 31 00 00 of the Specifications.
 2. Provide fertilizer on sodded areas, as specified.
 3. Provide sodding of areas designated on Drawings.
 4. Provide maintenance and establishment of turf beginning immediately after sodding.
 5. Provide restoration to existing lawn areas beyond construction limits which are damaged by work being performed under the Contract. Patching shall include proper preparation of underlying soils and providing new sod.
- B. Related Sections:
1. Section 31 00 00: Earthwork
 2. Section 31 25 00: Erosion Control

1.03 QUALITY ASSURANCE

- A. Installer's Qualifications: Final preparation of earth and sodding work shall be performed by a single firm which specializes in landscape work.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Delivery and Storage of Sod: Time delivery of sod to ensure that sod will be placed within 24 hours after stripping. Protect sod against drying and breaking of rolled strips.
- B. Delivery and Storage of Packaged Materials: Deliver packaged materials in containers showing weight, analysis, and name of manufacturer. Protect materials from deterioration during delivery and while stored at site.

PART 2 - PRODUCTS

2.01 GRASS MATERIALS

- A. Sod:
1. Class of Sod: Sod shall be nursery grown, cultured sod planted on cultivated agricultural land and grown specifically for sod purposes. Sod shall have been mowed regularly and carefully and otherwise maintained from planting to harvest to maintain reasonable quality and uniformity.
 2. Composition: Sod shall be composed of not less than 60 percent Kentucky Bluegrass.
 3. Mowing Height: Before stripping, sod shall be mowed uniformly at a height of 1 inch to 2 ½ inches.
 4. Thatch: Sod shall be relatively free of thatch, up to ½-inch allowable (uncompressed).
 5. Diseases, Nematodes, and Insects: Sod shall be reasonably free of diseases, nematodes, and soil-borne insects.
 6. Weeds: Sod shall be free of objectionable grassy and broad leaf weeds.

- B. Fertilizer: Commercial grade, uniform in composition, free-flowing material suitable for application with approved standard equipment. Deliver fertilizer in original, unopened containers, bearing manufacturer's guarantee, analysis, name and trademark. Fertilizer shall have a formula of 17-3-17 (17 percent Nitrogen, 3 percent Phosphate, 17 percent Potash). Fertilizer shall be formulated with a slow release sulphur coated Nitrogen and a slow release sulphur coated Potassium.

PART 3 - EXECUTION

3.01 SODDING SCHEDULE

- A. Sod all areas in accordance with the scheduling / phasing indicated in the Contract Documents. Maintenance, including mowing and watering, shall continue until the latter of the following:
 - 1. A minimum of 1 growing month from the time sod is installed,
 - 2. Until Project Substantial Completion,
 - 3. Or turf establishment as determined by the Landscape Architect / Engineer.

3.02 FINE GRADING

- A. Tilling and Fine Grading: Cultivate to bring soil to a uniformly friable condition with a smooth, even, well drained surface. Perform work only during periods when beneficial results are likely to be obtained. Smooth undulations and irregularities in surface prior to sodding. Reconstruct flooded, washed out, and damaged areas and re-established grades in accordance with Drawings.
- B. Clean-Up: Prior to sodding, clear surface of debris, roots, and other objects that would interfere with planting or maintenance operations.

3.03 LAYING SOD

- A. General Requirements: Before laying, correct soft spots and inequalities and remove foreign materials. Sod shall be laid with no voids and shall be well tamped or rolled and thoroughly watered. At completion of Work sod shall be true and finished grade, firm and even at all points.
- B. Fertilizing: Apply 250 pounds of specified fertilizer per acre.
- C. Where new sod meets existing turf, existing turf edge shall be cut to allow a consistent, uniform straight edge. Remove topsoil at joint between existing and new as required to allow new sod surface to be flush with existing.

3.04 WATERING

- A. After sod has been laid, thoroughly soak sod immediately following placement and, thereafter, once per day, except when adequate rain may fall to make watering unnecessary. Begin watering sod the first day sod is laid and continue watering sod during sod laying period. Keep sod adequately watered until maintenance dates noted herein. Dry or dead sod will not be accepted.
- B. Procurement of water will be the responsibility of the Contractor. Construct temporary above ground irrigation systems, consisting of piping, heads, valves, etc., as required adequately water sodded areas. All costs associated with watering, including temporary irrigation systems, shall be borne by the Contractor.

3.05 MOWING

- A. Mowing: Mowing shall be accomplished by the Contractor until the latter of the time frames noted in Paragraph 3.01 of this Section.
1. Frequent mowing of the grass will be critical to turf development. The Contractor shall make weekly inspections of the turf growth to insure that proper mowing is being accomplished.
 2. Cutting Height: When grass blades have reached a height of 3 to 4 inches, mow the new turf to a height of 2 ½-inches. Mowing shall only be done with a sharp mower. Subsequent mowings shall be accomplished so as never to cut more than 1 inch from the grass blade during each cutting. It is anticipated that mowing will be necessary every 5 to 6 days.
 3. Grass shall not be allowed to go into the winter dormant stage with a greater height than 2 ½ inches.

3.06 CLEANING

- A. General Requirements:
1. At completion of work, clean up and remove from site surplus materials, roots, stones, and debris and leave area in a clean, neat condition.
 2. Remove promptly soil and other extraneous material brought onto paved areas by work operations. Keep paved areas clean at all times.
 3. Restore ground areas disturbed as a result of sodding operations to their original condition or to desired new appearance.

3.07 PROTECTION

- A. General Requirements: Protect lawn work and materials from damage due to landscape operations, operations by other contractors and trades, and trespassers. Maintain protection during installation and maintenance periods. Treat, repair, and replace damaged lawn work.

END OF SECTION 32 92 23

DETAIL OF CONSTRUCTION



**ANDERSON - JOHNSON
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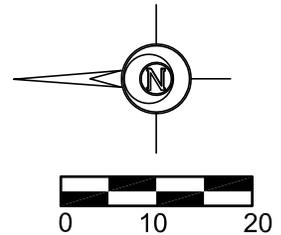
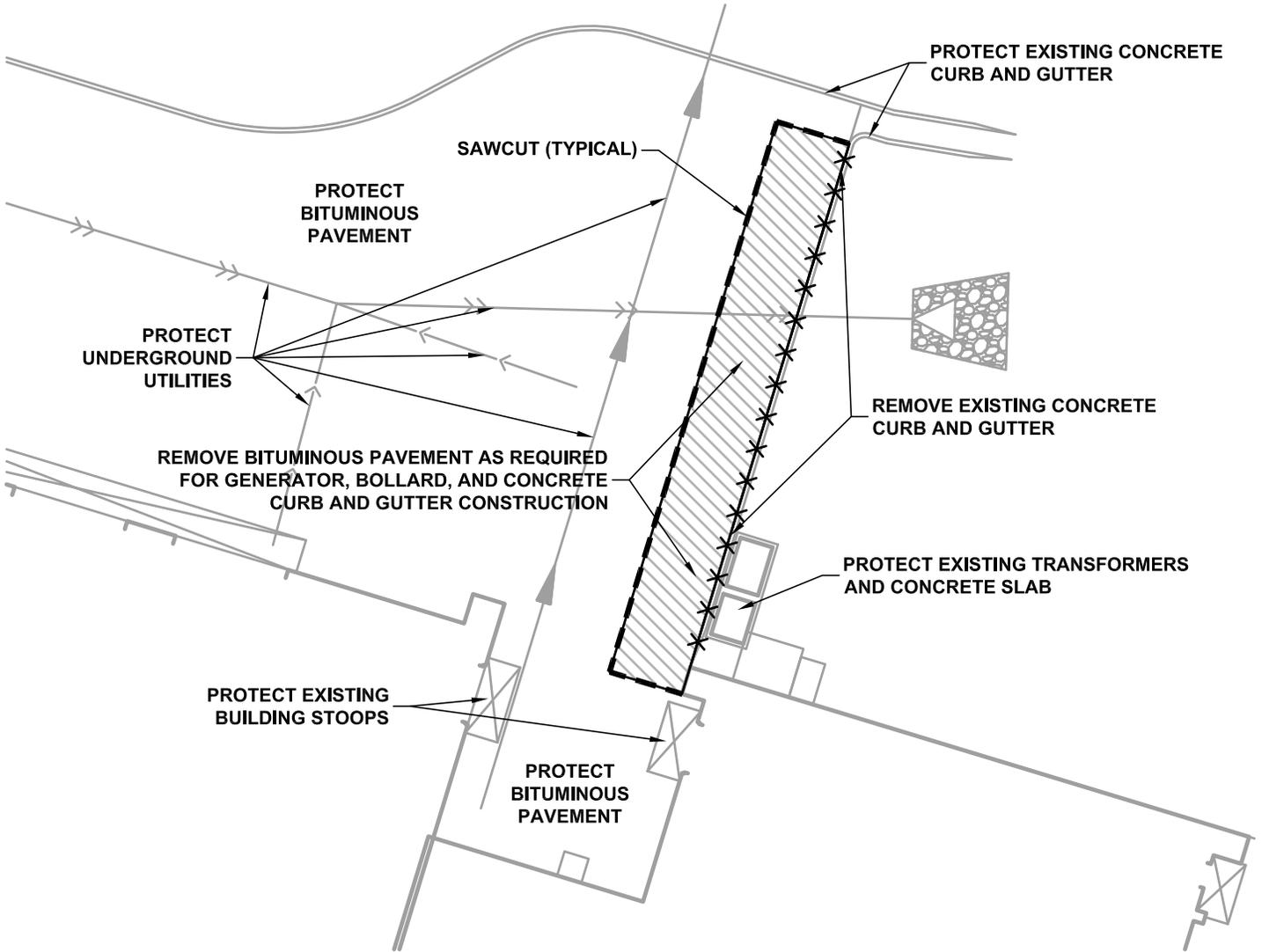
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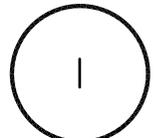
SUBJECT: REMOVALS PLAN
MINNEAPOLIS EOTF GENERATOR ADDITION

DATE: 12/21/2012
COMMISSION NO: 122118

REV. DATE

REVISIONS

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed PROFESSIONAL ENGINEER under the laws of the State of MINNESOTA.



Signature:
Typed or Printed Name: DAVID A. REY
Date 01/02/13 Registration Number 40180

DETAIL OF CONSTRUCTION

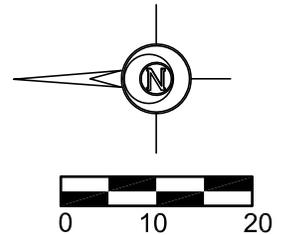
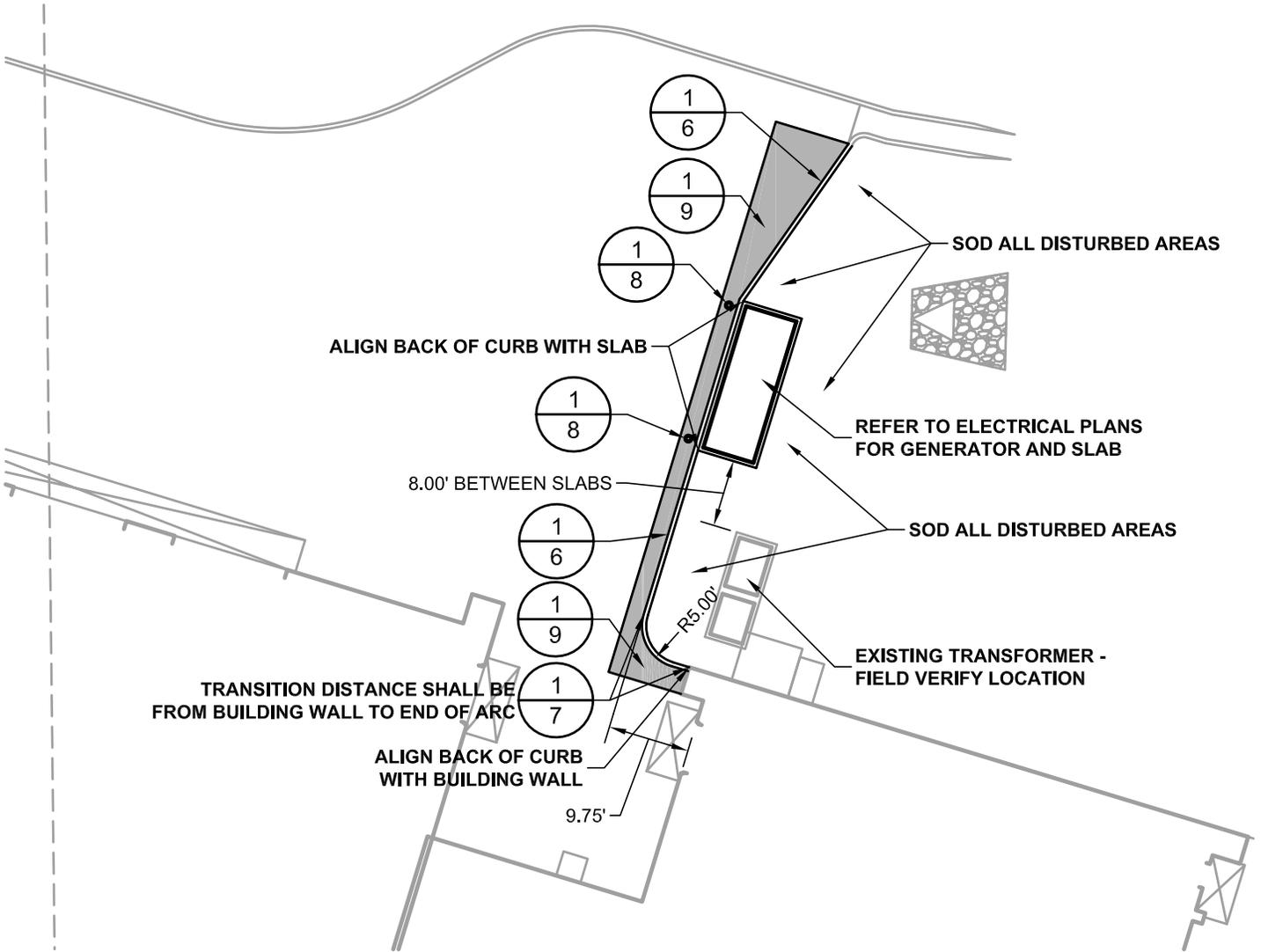


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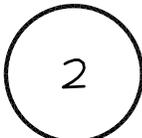
SUBJECT: SITE PLAN
MINNEAPOLIS EOTF GENERATOR ADDITION

DATE: 12/21/2012
COMMISSION NO: 122118

REV. DATE

REVISIONS

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Signature:
Typed or Printed Name: DAVID A. REY
Date 01/02/13 Registration Number 40180

DETAIL OF CONSTRUCTION



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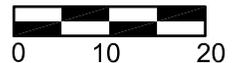
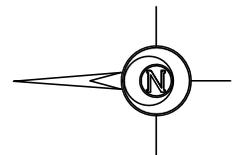
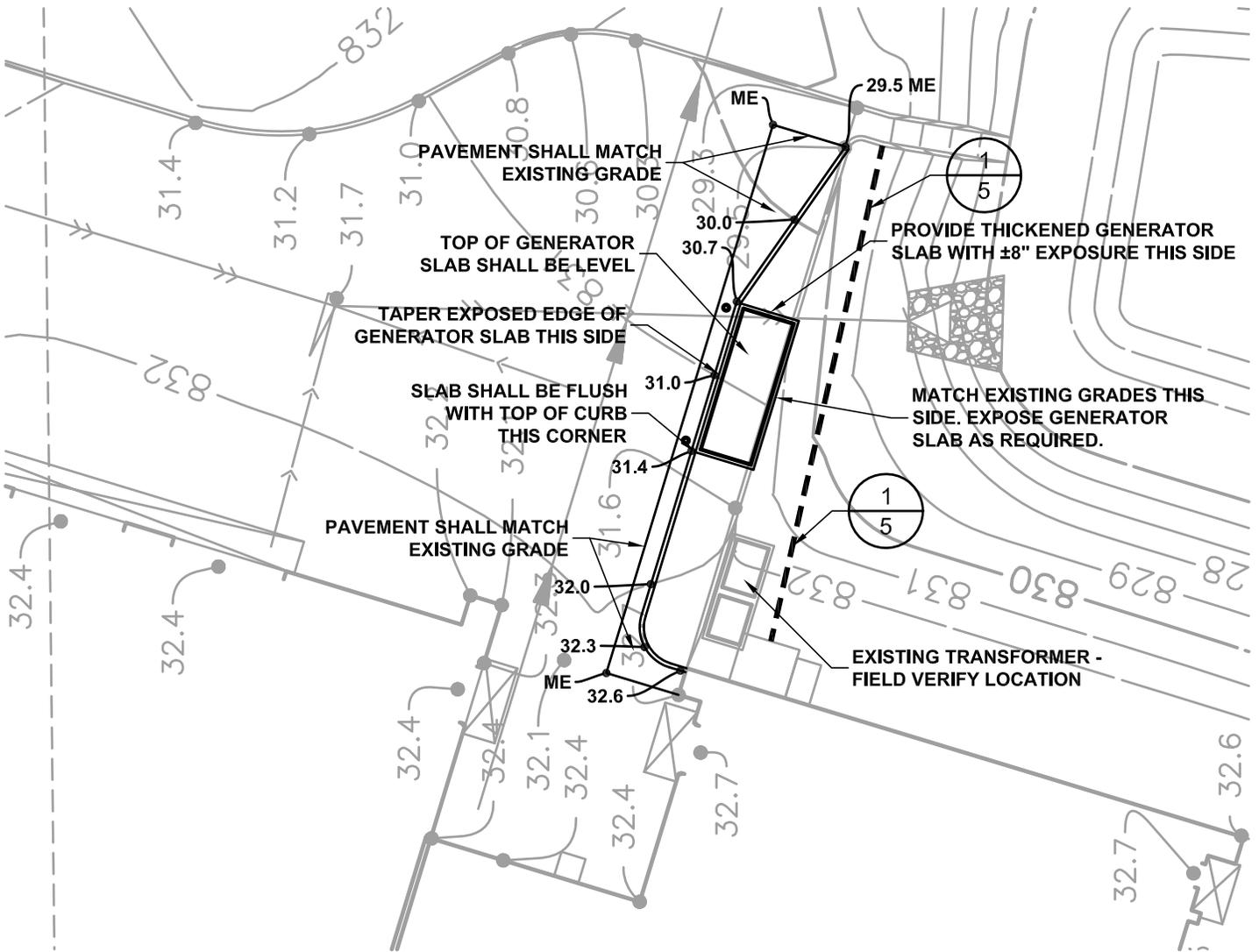
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SUBJECT: GRADING AND DRAINAGE PLAN
MINNEAPOLIS EOTF GENERATOR ADDITION

DATE: 12/21/2012
COMMISSION NO: 122118

REV. DATE

REVISIONS

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed PROFESSIONAL ENGINEER under the laws of the State of MINNESOTA.

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Signature:
Typed or Printed Name: DAVID A. REY
Date 01/02/13 Registration Number 40180



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GENERAL NOTES

- 1. ALL CONSTRUCTION MUST COMPLY WITH APPLICABLE STATE AND LOCAL ORDINANCES.
2. THE CONTRACTOR WILL BE RESPONSIBLE FOR AND SHALL PAY FOR ALL CONSTRUCTION STAKING / LAYOUT.
3. INSPECT SITE AND REVIEW SOIL BORINGS TO DETERMINE EXTENT OF WORK AND NATURE OF MATERIALS TO BE HANDLED.
4. CHECK ALL PLAN AND DETAIL DIMENSIONS AND VERIFY SAME BEFORE FIELD LAYOUT.
5. MAINTAIN ADJACENT PROPERTY AND PUBLIC STREETS CLEAN FROM CONSTRUCTION CAUSED DIRT AND DEBRIS ON A DAILY BASIS. PROTECT DRAINAGE SYSTEMS FROM SEDIMENTATION AS A RESULT OF CONSTRUCTION RELATED DIRT AND DEBRIS.
6. MAINTAIN DUST CONTROL DURING GRADING OPERATIONS.
7. ALL EROSION CONTROL METHODS SHALL COMPLY WITH MPCA AND LOCAL REGULATIONS.
8. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO SITE AND PROTECT EXISTING SITE FEATURES (INCLUDING TURF AND VEGETATION) WHICH ARE TO REMAIN.
9. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR DETERMINING QUANTITIES OF FILL AND WASTE MATERIALS TO BE HANDLED, AND FOR AMOUNT OF GRADING TO BE DONE IN ORDER TO COMPLETELY PERFORM ALL WORK INDICATED ON THE DRAWINGS. COST OF IMPORTING FILL OR EXPORTING EXCESS OR WASTE MATERIALS WILL BE INCIDENTAL TO THE CONTRACT.
10. NO FINISHED SLOPES SHALL EXCEED 4' HORIZONTAL TO 1' VERTICAL (4:1), UNLESS OTHERWISE NOTED.
11. ALL DISTURBED AREAS WHICH ARE NOT DESIGNATED TO BE PAVED SHALL RECEIVE AT LEAST 6" OF TOPSOIL AND SHALL BE SODDED.
12. WHERE NEW SOD MEETS EXISTING SOD, EXISTING SOD EDGE SHALL BE CUT TO ALLOW FOR A CONSISTENT, UNIFORM STRAIGHT EDGE. JAGGED OR UNEVEN EDGES WILL NOT BE ACCEPTABLE. REMOVE TOPSOIL AT JOINT BETWEEN EXISTING AND NEW AS REQUIRED TO ALLOW NEW SOD SURFACE TO BE FLUSH WITH EXISTING.
13. FAILURE OF TURF DEVELOPMENT: IN THE EVENT THE CONTRACTOR FAILS TO PROVIDE AN ACCEPTABLE TURF, THE CONTRACTOR SHALL RE-SOD ALL APPLICABLE AREAS, AT NO ADDITIONAL COST TO THE OWNER, TO THE SATISFACTION OF THE ENGINEER.
14. LOCATE ALL EXISTING UTILITIES, VERIFY LOCATION, SIZE AND INVERT ELEVATION OF ALL EXISTING UTILITIES. VERIFY LOCATIONS, SIZES AND ELEVATIONS OF SAME BEFORE BEGINNING CONSTRUCTION.

SUBJECT: GENERAL NOTES MINNEAPOLIS EOTF GENERATOR ADDITION

DATE: 12/21/2012

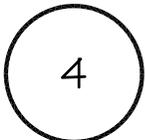
COMMISSION NO: 122118

REV. DATE

REVISIONS triangle symbol

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed PROFESSIONAL ENGINEER under the laws of the State of MINNESOTA.

Signature: DAVID A. REY
Typed or Printed Name: DAVID A. REY
Date 01/02/13 Registration Number 40180



DETAIL OF CONSTRUCTION



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FAX (763) 544-0531 • PH (763) 544-7129



WOLD ARCHITECTS AND ENGINEERS

6 WEST FIFTH STREET
ST. PAUL, MN 55102

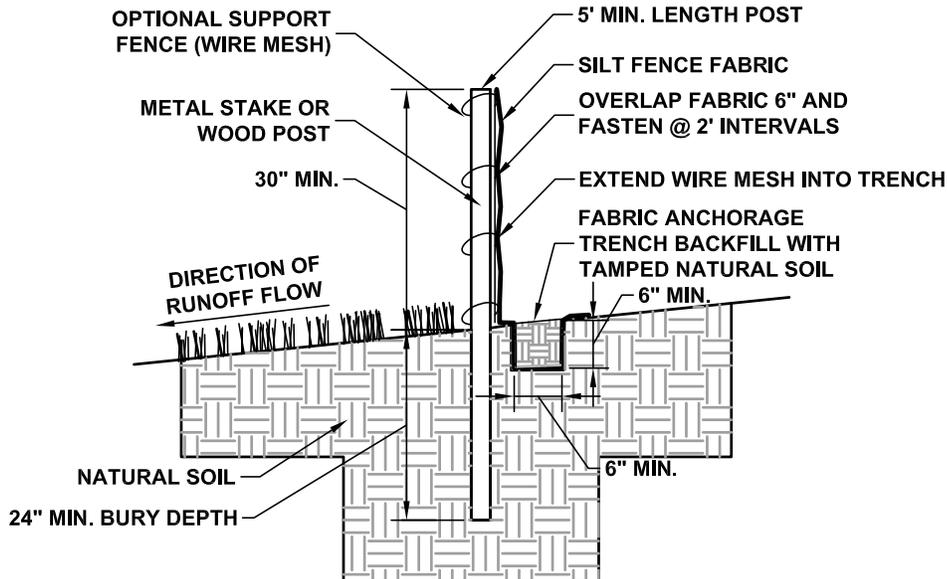
FAX: 651.223.5646 TEL: 651.227.7773

715 TOLLGATE ROAD, SUITE H

ELGIN, IL 60123

FAX: 847.608.2654 TEL: 847.608.2600

		WOOD	METAL
HEAVY DUTY	POSTS: (IF USED WITH SUPPORT FENCE)	4" DIA. (MIN) @ 8' (MAX) SPACING	1.3 lbs/lf (MIN.) @ 8' (MAX) SPACING
NORMAL USE	POSTS: (IF USED WITHOUT SUPPORT FENCE)	2" SQ. (MIN) @ 4' (MAX) SPACING	1.0 lbs/lf (MIN.) "T" OR "U" SECTION @ 4' (MAX) SPACING



NOTE: DEPENDING UPON CONFIGURATION, ATTACH TO WIRE MESH WITH HOG RINGS, STEEL POSTS WITH TIE WIRES, OR WOOD POSTS WITH STAPLES

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5

SILT FENCE

SUBJECT: SILT FENCE DETAIL
MINNEAPOLIS EOTF GENERATOR ADDITION

DATE: 12/21/2012

COMMISSION NO: 122118

REV. DATE

REVISIONS

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed PROFESSIONAL ENGINEER under the laws of the State of MINNESOTA.

Signature:
Typed or Printed Name: DAVID A. REY
Date 01/02/13 Registration Number 40180

5

DETAIL OF CONSTRUCTION



ANDERSON - JOHNSON ASSOCIATES, INC.

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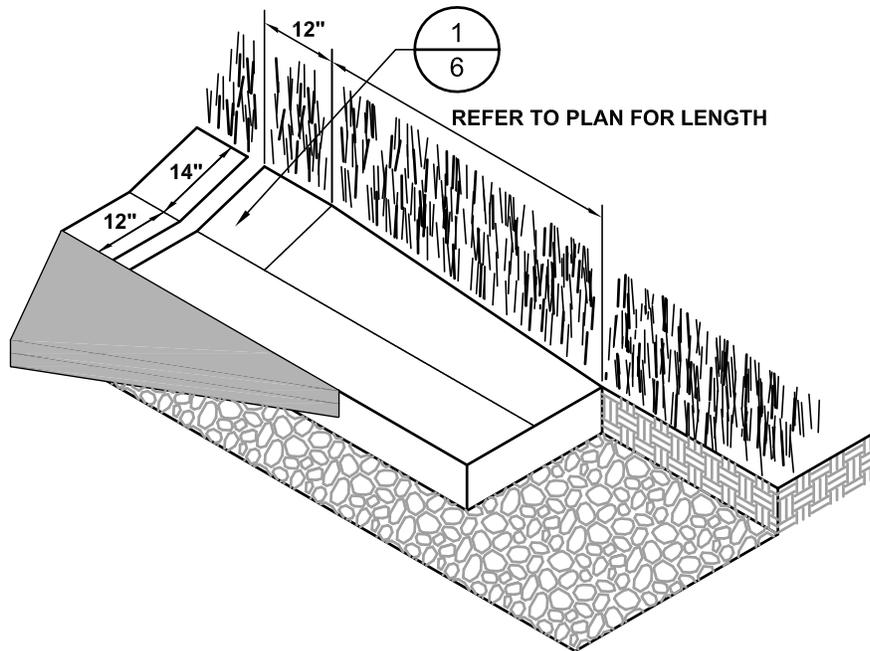
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1/7

D-412 CURB TERMINATOR

SUBJECT: D-412 CURB TERMINATOR DETAIL
MINNEAPOLIS EOTF GENERATOR ADDITION

DATE: 12/21/2012

COMMISSION NO: 122118

REV. DATE

REVISIONS triangle symbol

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7

Signature: [Handwritten Signature]
Typed or Printed Name: DAVID A. REY
Date 01/02/13 Registration Number 40180

DETAIL OF CONSTRUCTION



**ANDERSON - JOHNSON
ASSOCIATES,
INC.**

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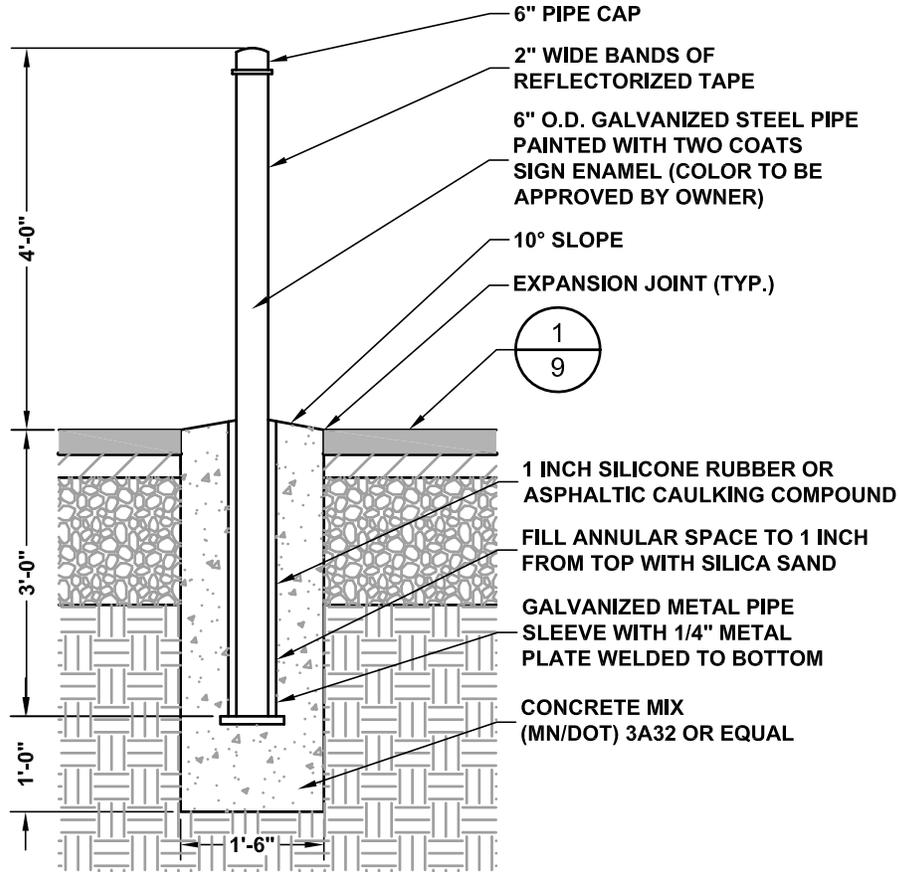
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1
8

BOLLARD

SUBJECT: BOLLARD DETAIL
MINNEAPOLIS EOTF GENERATOR ADDITION

DATE: 12/21/2012

COMMISSION NO: 122118

REV. DATE

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8

Signature:
Typed or Printed Name: DAVID A. REY
Date 01/02/13 Registration Number 40180

DETAIL OF CONSTRUCTION



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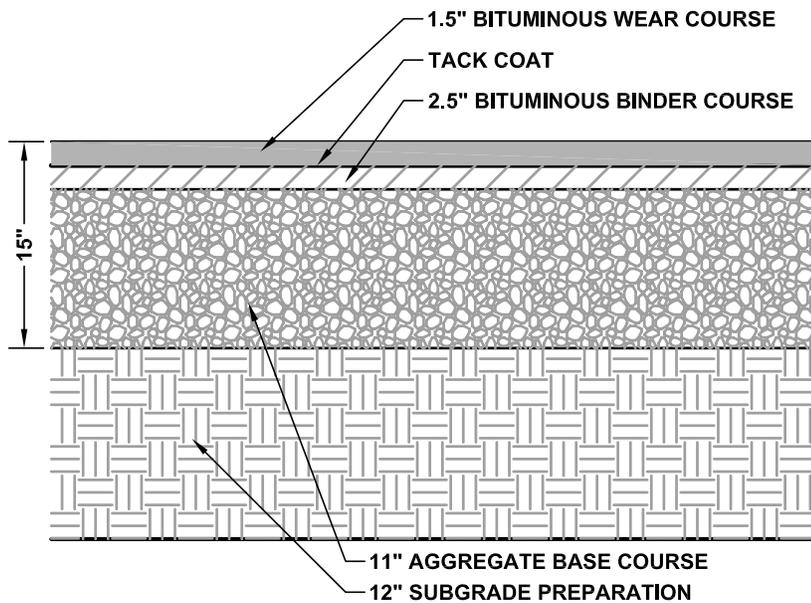
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9

BITUMINOUS PAVEMENT

SUBJECT: BITUMINOUS PAVEMENT DETAIL
MINNEAPOLIS EOTF GENERATOR ADDITION

DATE: 12/21/2012

COMMISSION NO: 122118

REV. DATE

REVISIONS

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9

Signature: DAVID A. REY
Typed or Printed Name: DAVID A. REY
Date 01/02/13 Registration Number 40180

City of Minneapolis - Department of Civil Rights (MDCR)
Pre-Bid Meeting
February 4, 2013
OP 7761 – Bids For Emergency Operations Training Facility Backup Generator Project

Pre-Award Review

Responsiveness

- Prevailing Wage Certificate – Signed
- SUBP Form – Signed

Responsibility

- **Small & Underutilized Business Program (SUBP) Goals**
 - Minority-owned Business Enterprise (MBE) – 6%
 - Woman-owned Business Enterprise (WBE) – 8%
- **Important SUBP Changes:**
 - ⇒ Ordinance: <http://www.ci.minneapolis.mn.us/government/ord/index.htm> → Search “Chapter 423”
 - ⇒ MBE/WBEs must be certified through the MN/UCP: www.dot.state.mn.us/civilrights
 - ⇒ CERT no longer recognized
 - ⇒ Labor subbed out by an MBE/WBE to a non-MBE/WBE will be subtracted out; ask up front!
 - ⇒ Good Faith Efforts Review (if SUBP goals not met)
 - Examples from new ordinance → next page.
 - Contact W/MBE companies within the scope of work that can be subcontracted.
 - Document all efforts to solicit to and contract with W/MBEs.
 - New forms required.

Pre-construction Review

- Employment Labor Hour Goals – Applied to Project
6% Female 32% Minority
- Affirmative Action Plan – contracts over \$50,000
 - Developer and general contractor required prior to award.
 - Subcontractors required after award but prior to working on site.
- Pre-Construction Booklet and Bidders List
 - Approval required prior to award.
 - Includes contract amount, employment hours, contact info. and wage/fringe info. for each subcontractor.
 - If any W/MBE company listed in pre-construction booklet is not used, contractor must seek prior approval from MDCR and replace with another W/MBE subcontractor.
- Prevailing Wage
 - City Prevailing Wage applies.
 - MDCR investigates complaints and apparent violations; on site interviews will be conducted.
 - Wages must be paid at least monthly.
 - Certified payroll must be entered into LCPtracker database monthly
- Prompt Payment
 - Subcontractors must be paid within 10 days of receipt of payment for undisputed services.
 - Required pursuant to Minnesota Statute 16A.1245.

423.90. Good faith efforts

(g) If a bidder or proposer has not fully met the project goal, then it shall demonstrate its good faith efforts to do so. The bidder or proposer must make every necessary and reasonable effort to subcontract work to MBEs/WBEs in advance of the dates specified for submitting and opening of bids or requests for proposals. The bidder or proposer must furnish to the director at the time of bid or proposal any forms that the director deems appropriate, which may include, but not be limited to, the SUBP Participation form, bidders list and certificate of good faith efforts and an affidavit of good faith. **The department may consider the following list of actions when reviewing if a business solicited in good faith:**

- (1) Soliciting through all reasonable and available means (attendance at pre-bid meetings, advertising and/or written notices) the interest of all MBEs/WBEs certified in the scopes of work of the contract. The bidder or proposer must solicit MBEs/WBEs in sufficient time prior to bid opening or the proposal deadline to allow MBEs/WBEs to respond to solicitations. The bidder or proposer must determine with certainty if the MBEs/WBEs are interested by taking appropriate steps to follow up on initial solicitations.
- (2) Selecting portions of the work to be performed by MBEs/WBEs in order to increase the likelihood that the project goals will be achieved. This includes, where appropriate, breaking out contract work into smaller units to facilitate MBE/WBE participation, even when a contractor might otherwise prefer to perform these work items with its own forces.
- (3) Providing interested MBEs/WBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.
- (4) The bidder or proposer must negotiate in good faith with interested MBEs/WBEs and provide written documentation of such negotiation with each such business. In determining whether the bidder or proposer negotiated in good faith, the department may consider a number of factors including price, scheduling and capabilities as well as the contract goal.
- (5) The fact that there may be some additional costs involved in finding and using MBEs/WBEs is not itself sufficient reason for a bidder's or proposer's failure to meet the project goals as long as such costs are reasonable.
- (6) If requested by a solicited MBE/WBE, the bidder or proposer must make reasonable efforts to assist such MBEs/WBEs in obtaining bonding, lines of credit or insurance as required by the city or by the bidder or proposer, provided that the bidder or proposer need not provide financial assistance toward this effort.
- (7) Effectively using the services of minority/woman community organizations; minority/woman contractors' groups; local, state and federal business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the solicitation and placement of MBEs/WBEs. (2011-Or-020, § 1, 3-10-11)

