STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	20057	1	1

Job #25

City of West Fargo, City of Fargo, and Cass County North Dakota

SU-8-992(036)037

West Fargo Improvement District 1279
Fargo Improvement District PN-15-A1
Cass County Project CH-1501
T140N R49 W Sec 31,32,33 & T139N R 49W Sec 4, 5, 6
12th Avenue North
Cass County Road 19 to 45th Street
Grading, Salvaged Base, PCC Pavement, Curb & Gutter, Sidewalk,
Storm Sewer, Sanitary Sewer, Watermain, Signing, Pavement Marking, Lighting, & Incidentals

DESIGN DATA

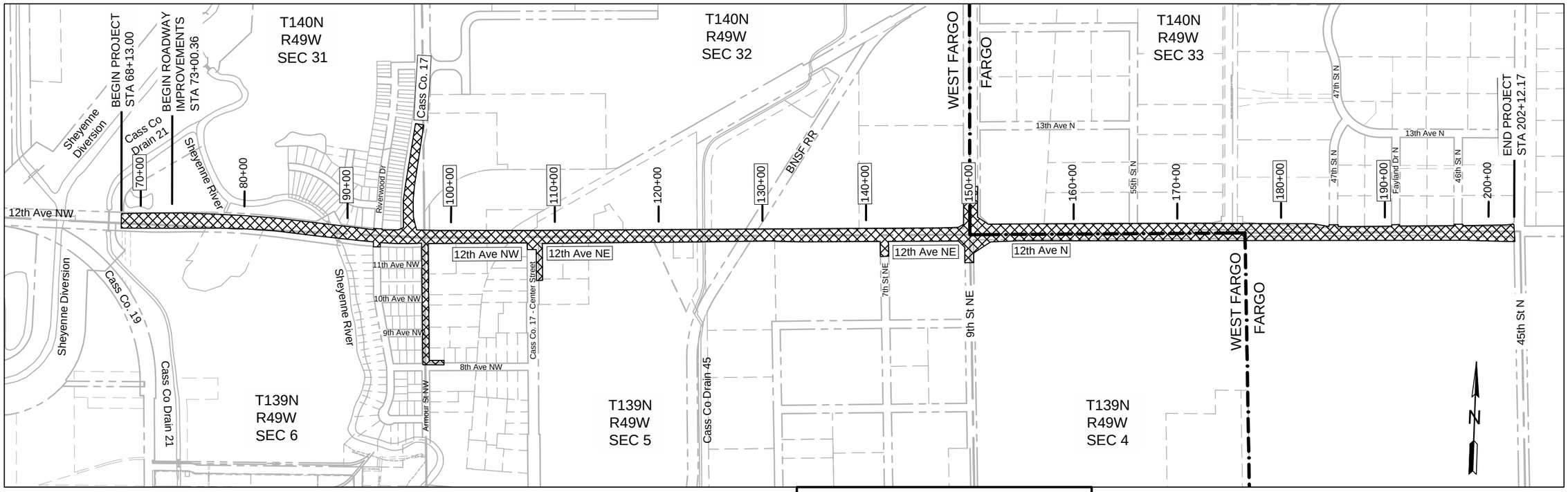
Traffic CR 19 to 9th St	Average Daily			Max.Hr.
Current 2014	Pass: 5,020	Trucks: 860	Total: 5,880	590
Forecast 2045	Pass: 9,860	Trucks: 1,690	Total: 11,550	1,155
Traffic 9th St to 45th St	**Average Daily**			**Max.Hr.**
Current 2014	Pass: 6,120	Trucks: 980	Total: 7,100	710
Forecast 2045	Pass: 13,100	Trucks: 2,090	Total: 15,190	1,520

Clear Zone Distance: 28 ft	Design Speed: 45 mph
Minimum Sight Dist. for Stopping: 360 ft	Bridges: N/A
Sight Dist. for No Passing Zone: 700 ft	
Pavement Design Life: 30 years	Rigid Design ESALs: 4,979,000 (CR 19 to Center) 5,903,000 (Center to 9th St)

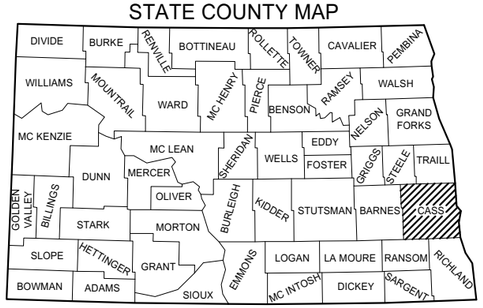
GOVERNING SPECIFICATIONS
2014 Standard Specifications adopted by the North Dakota Department of Transportation and the Supplemental Specifications effective on the date the project is advertised.

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
SU-8-992(036)037	2.538	2.538

ALL ELEVATIONS NGVD 29



STATE COUNTY MAP



APPROVED DATE 7/6/15

Chris Brungardt /s/
PUBLIC WORKS DIRECTOR
CITY OF WEST FARGO

APPROVED DATE 7/1/15

April E. Walker /s/
CITY ENGINEER
CITY OF FARGO

APPROVED DATE 7/7/15

Jason P. Benson /s/
COUNTY ENGINEER
CASS COUNTY HIGHWAY DEPARTMENT

I hereby certify that the attached plans were prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the state of ND.

APPROVED DATE 6/30/15

Matthew T. Kinsella /s/
Apex Engineering Group

This document was originally issued and sealed by Matthew T. Kinsella Registration Number PE-5692, on 6/30/2015 and the original document is stored at the City of West Fargo

DESIGNERS

Mike Johnson	Austin Yates
Tony Lapp	Crystal Topping
Scott Schneider	Tim Golka
Yang Liu	
Dave Monge	

Apex Engineering Group, Inc.

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NDDOT STANDARD DRAWINGS - Continued

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Apex Engineering Group	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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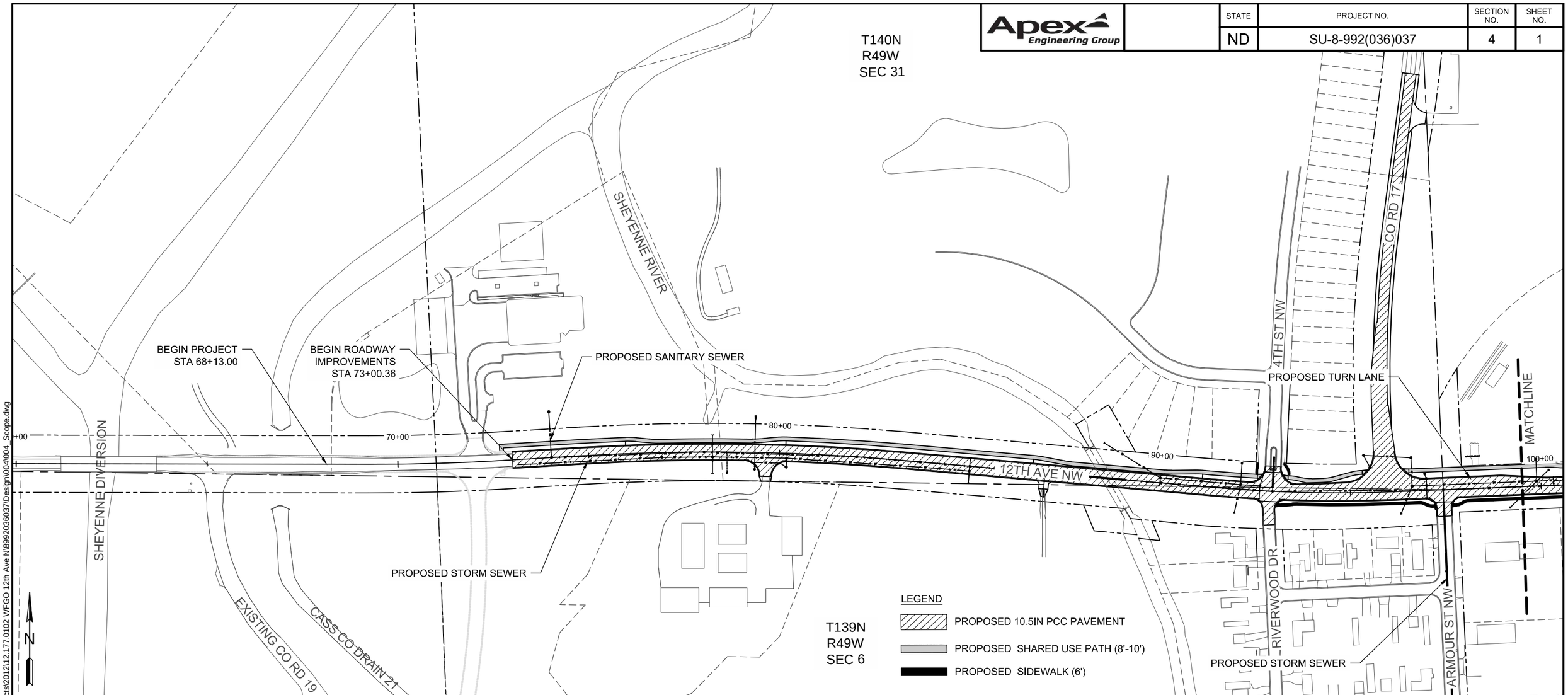

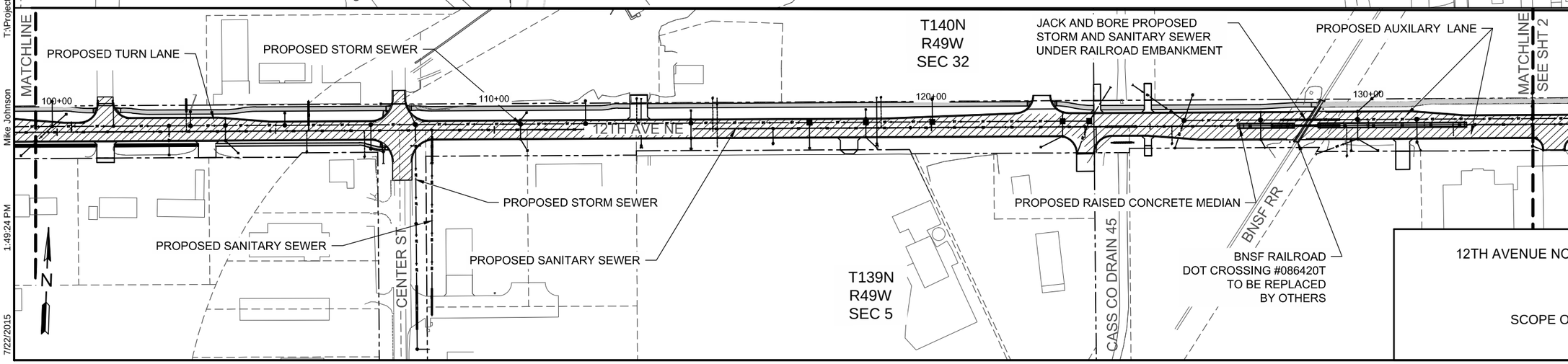

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12TH AVENUE NORTH RECONSTRUCTION

SCOPE OF WORK (1 OF 2)

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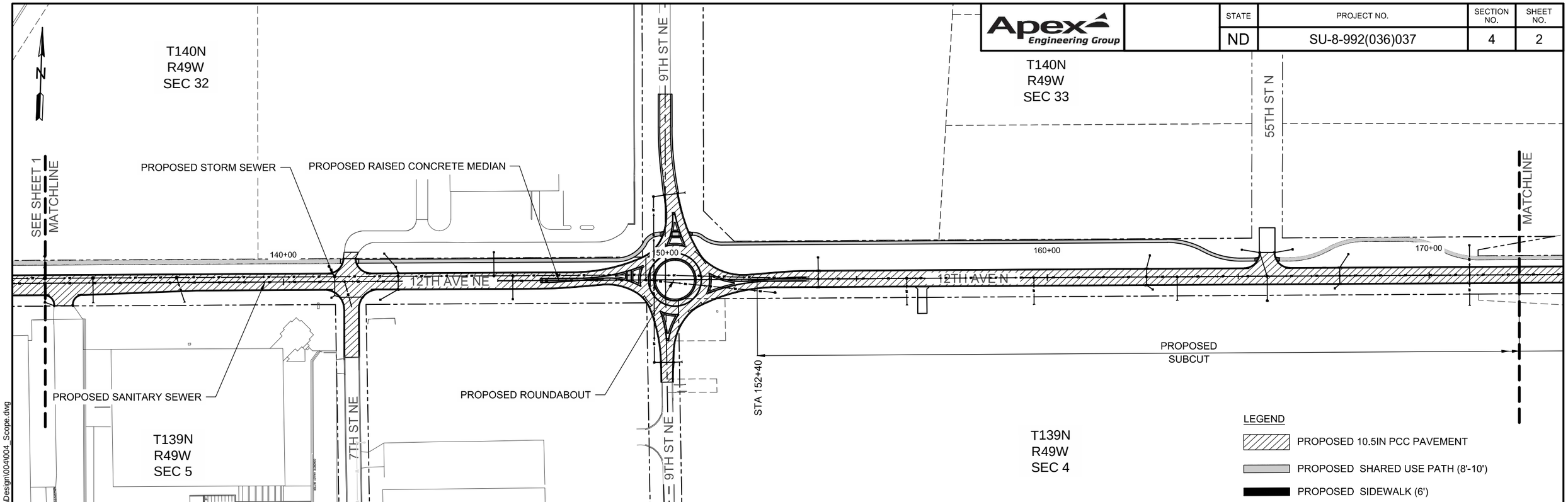

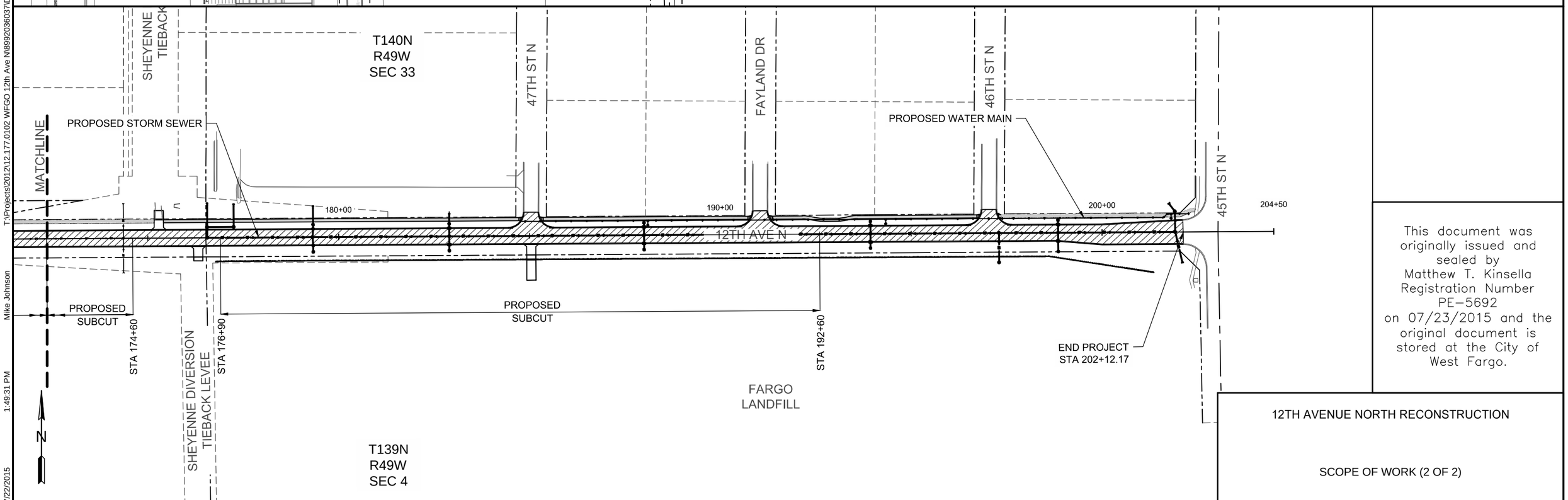

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12TH AVENUE NORTH RECONSTRUCTION

SCOPE OF WORK (2 OF 2)

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NOTES

GENERAL NOTES

100-021 WEEKLY PLANNING/REPORTING MEETING: Organize a weekly meeting to coordinate efforts between subcontractors, utilities, local authorities, and others.

Send a knowledgeable representative to conduct the weekly reporting/planning meeting. Prepare minutes for each meeting and make the appropriate distribution of the minutes. Have the minutes approved by the Engineer before distribution.

Provide a written schedule of the next week's work and a tentative schedule of the following week. Include a discussion of problems encountered during the current week; also include information of interest to local authorities, subcontractors, and utilities.

Invite interested agencies to the meeting. Include the following agencies and any other agencies that are necessary:

a. North Dakota Department of Transportation
b. Local Government Agencies
c. Police department
d. Fire department
e. Ambulance service
f. Telephone Co.
g. Power Co.
h. Cable T.V.
i. Gas Co.
j. Railroad Co.
k. Subcontractors
l. Chamber of Commerce
m. FHWA

100-P01 PUBLIC RELATIONS COORDINATOR: Provide a public relations and information coordinator. The coordinator should not be the project superintendent or construction foreman. The coordinator should be knowledgeable in construction operations, be able to develop effective media releases, possess written and verbal communication skills, and be able to organize productive meetings.

Provide the name, work address, and work phone number to the relevant project, community, and media personnel.

The public relations coordinator will be responsible for providing the following:

1. Organizing, scheduling, and conducting the meeting specified in Note 100-021, “Weekly Planning/Reporting Meeting.”
2. Advise City of West Fargo Public Works, 701-433-5400; City of Fargo Engineering, 701-241-1545; and Cass County Highway Department, 701-298-2370, of upcoming construction activities in regard to street closures and traffic detour routes so that city police, emergency services, schools, and other pertinent city agencies may be notified.
3. Provide news releases and necessary drawings to the media before and during construction. News releases should inform the public on construction activities, schedules, street closures, width or height restrictions to traffic, and traffic detour routes. Update news releases regarding construction activities every other week, at a minimum.
4. Be available for media interviews.
5. Work directly with property owners and businesses affected by construction activities. The coordinator must have sufficient knowledge and authority to resolve property owner and business concerns regarding scheduling, maintaining access, and construction operations.

100-P02 COORDINATION OF PROJECTS: There are other projects that will occur in the vicinity of this project during the 2016 and 2017 construction seasons. The Contractor shall coordinate work efforts and traffic control devices to minimize confusion and delay to the public. Projects known to be occurring in the vicinity of this project include:

- NDDOT NHU-8-010(032)932 – West Fargo Main Avenue I-94 to Sheyenne River
- SE Cass Water Resource District – Re-grading of Drain 21
- SE Cass Water Resource District – Re-grading of Drain 45 and replacement of twin culverts
- West Fargo – County Road 19 realignment
- Fargo – PN-15-F1 Commerce on 12th Addition
- Xcel Energy – Installation of new 2” gas line from West Fargo Public Works to Center Street

100-P03 USGS STREAM GAGING STATION: The United States Geological Survey (USGS) operates a Stream Gaging Station within the project limits. The Stream Gaging Station building is located at approximate Station 89+70, 62’ Lt. The building is outside of the construction limits and shall not be disturbed. Conduit and cable is present within the project grading limits from the building to the river gage. The Contractor shall contact Chris Laveau at the USGS Grand Forks office, 701-775-7221 ext. 11, a minimum of two weeks prior to beginning work in this area.

100-P04 PRIVATE SECURITY FENCE: The existing chain link fence with barb wire located on the south side of 12th Avenue North from Sta 113+25 to 119+60 Rt is a security fence for Cargill, and is to remain in place and shall not be disturbed. Any damage to the fence shall immediately be repaired or replaced by the Contractor at the Contractor’s expense.

100-P05 PHASE I ENVIRONMENTAL SITE ASSESSMENT: The Contractor is made aware that a Phase I Environmental Site Assessment (ESA) report has been completed for this project corridor, and several properties adjacent to the project corridor were found to have potential for environmental contamination. The complete report is available for viewing at the City of West Fargo Public Works Building, 810 12th Avenue NW, West Fargo, ND.

105-110 PAVEMENT SWEEPING: Sweep paved areas that were used by construction traffic before opening these areas to public traffic.

Sweep all newly constructed pavement no more than 24 hours before a scheduled final inspection.

Use a vacuum or pick-up type sweeper to perform this work.

105-200 UTILITY COORDINATION: A utility coordination meeting is required.

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107-115 RAILROAD PROTECTIVE LIABILITY INSURANCE: This project crosses the BNSF Railway Company at MP 0.83. The type of work that will be performed within the railroad right of way is grading, storm sewer, sanitary sewer, salvaged base, and paving. Direct inquiries regarding protective liability insurance to:

Rosa Martinez
Marsh Co.
Texas
214-303-8519
Obtain information regarding crossing number 086420T from the Federal Railroad Administration website:
http://safetydata.fra.dot.gov/Officeofsafety/

107-P01 HAUL ROADS: At the preconstruction meeting or prior to hauling over the project, the Contractor and Engineer shall agree on the designated haul roads so as to minimize hauling over the project. The Contractor shall follow the City or County's overdimensional policy. The meeting to discuss haul roads shall be scheduled at least one week prior to the start of construction.

107-P02 MAINTAINING ACCESS: The Contractor will be allowed to close access points to properties and businesses that have more than one access point. At least one access point to each property and business shall be maintained at all times. The Contractor shall notify and coordinate with landowners and businesses a minimum of 72 hours prior to closing or restricting an access point.

203-010 SHRINKAGE: 30 percent additional volume is included for shrinkage in earth embankment.

203-360 COMPACTION AND DENSITY CONTROL: Compact material as specified in Section 203.04.E.2.b, "ND T-99."

203-385 AVERAGE HAUL: No average haul has been computed for this project.

203-P01 COMMON EXCAVATION-TYPE A: Payment for "Common Excavation-Type A" shall be at contract plan quantity.

203-P02 COMMON EXCAVATION-SUBCUT: Material that is removed by subcut shall not be used within the roadway section or shared-use path limits, but can be used outside the roadway section limits to fill ditches and at the base of embankment fill slopes. Payment for "Common Excavation-Subcut" shall be at contract plan quantity.

203-P03 BORROW-EXCAVATION: All borrow required shall be obtained by the Contractor from sources outside the street right of way. Borrow source clues and contact information are provided below.

- NW ¼ Sec 4 T139N R49W (material is adjacent to 12th Ave N south ROW line)
  Approximately 65,000 CY clay available
  Contact: Jason Leonard, City of Fargo Engineering, 701-241-1545

- NW ¼ Sec 3 T139N R49W
  Approximately 20,000 CY brown clay and 40,000 blue clay available
  Contact: Paul Hanson, City of Fargo Landfill Supervisor, 701-730-8705

- NE ¼ of the NE ¼ Sec 2 T139N R50W
  Approximately 100,000 CY clay available
  Contact: Chris Brungardt, West Fargo Public Works, 701-433-5400

- SE ¼ of Sec 32 T140N R49W
  Approximately 20,000 CY clay available
  Contact: Chris Brungardt, West Fargo Public Works, 701-433-5400

- N ½ of Sec 6 T139N R49W
  Approximately 60,000 CY clay available
  Contact: Jeff Brown, Engineer for Southeast Cass Water Resource District, 701-282-4692

203-P04 SUBGRADE PREPARATION: Subgrade areas under the roadway section that have not already been disturbed by utility trenching or by subcutting, shall be scarified and recompacted to a depth of 6 inches.

All subgrades shall be proof rolled with a fully loaded tandem axle dump truck weighing not less than 50,000 lb to check for localized weak areas prior to placement of salvaged base course. The surface will be deemed acceptable when it is tightly bound and shows no rutting or displacement under roller operation as approved by the Engineer. Any subgrade areas deemed not acceptable shall be re-scarified, shaped, and compacted until they show no rutting or displacement.

All costs associated with scarifying, recompacting, and proof rolling the subgrade shall be included in the price bid for "Common Excavation-Type A."

302-110 BASE COURSE: Trim base course as specified in Section 302.04.C.1, "Surface Tolerance Type B."

302-P01 SALVAGED BASE COURSE: Compact Salvaged Base Course in accordance with Section 203.04.E.2.b, with the exception that the material shall be compacted to 100 percent of the maximum dry density.

430-P01 COMMERCIAL GRADE HOT MIX ASPHALT: PG 58-28 asphalt cement shall be used for Commercial Grade Hot Mix Asphalt. All costs for PG 58-28 asphalt cement, tack coat, and all materials, equipment, and labor required to perform this work shall be included in the price bid for "Commercial Grade Hot Mix Asphalt."

550-P01 PIGMENTED CONCRETE: The concrete placed in the truck apron of the roundabout shall be pigmented (area shown on the Section 60 plans). Provide a pigment from the list below or provide an approved equal. To be considered an approved equal, pigments must meet the requirements of ASTM C 979.

1. Number 775 Sedona, produced by Solomon Colors, Inc.
   http://www.solomoncolors.com;

2. Number 10134 Terra Cotta, produced by Davis Colors
   http:/www.daviscolors.com

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Use the same supplier for all colored concrete placed under the contract.

Add pigment at the ratio recommended by the manufacturer directly into the mixer along with the aggregate, cement, and water. Add pigment while the mixer is operating at mixing speed. Continue mixing for 5 to 10 minutes or between 50 and 100 revolutions.

Cure concrete using curing compound that meets the requirements of ASTM C 309, Type 1.

All costs associated with pigmenting the concrete shall be included in the price bid for "10.5In Non Reinf Concrete Pvmt Cl AE-Doweled."

704-100 TRAFFIC CONTROL SUPERVISOR: Provide a Traffic Control Supervisor.

704-P01 TRAFFIC CONTROL PHASES AND INTERIM COMPLETION DATES:

Phases and Interim Completion Dates
Interim completion dates are listed below within each traffic control phase description. The Contractor shall be charged a penalty of $1,500 per calendar day for failure to meet interim completion dates. Holidays and Sundays will be counted as calendar days for applications of penalties. Multiple interim penalties may occur concurrently.

2016 Construction

Phase 1A: Close 12th Ave N to thru traffic from east side of County Road 19 to west side of County Road 17. Detour thru traffic to Main Ave W as shown in the plans. Construct all underground City utilities and services. Install storm sewer system. Complete grading and street paving, sidewalks and shared use paths, driveways, signing, pavement marking, and street lighting. Phase 1A shall be complete and opened to traffic by August 15, 2016. Access to Riverwood Drive/4th Street from 12th Ave N shall be closed during Phase 1A construction. Access to the adjacent residential properties is available from the surrounding roadway network. The Contractor shall maintain 12th Ave N access to the intersection at Sta 72+00 and the driveway at Sta 79+70 RT during Phase 1A construction. Driveway located at Sta 87+00 RT shall be closed during Phase 1A construction. Phase 1A and 1B shall be constructed concurrently.

Phase 1B: Close 12th Ave N to thru traffic from east of 9th Street to west side of 45th Street. Detour thru traffic to 7th Ave N as shown on the plans, see Phase 1A and Phase 1B Detour sheets. Construct all underground City utilities and services. Install storm sewer system. Complete grading and street paving, shared use path, driveways, traffic signal modifications, signing, pavement marking, street lighting, and IT conduit installation from Sta 157+50 to 45th Street. The following interim completion dates shall apply:

- Installation of all underground City utilities and storm sewer from Sta 157+50 to 45th Street shall be completed by August 1, 2016.
- The section of 12th Ave N roadway from 47th Street to 45th Street shall be complete and opened to traffic by August 1, 2016.
- The section of 12th Ave N roadway from Sta 157+50 to 47th Street shall be complete and opened to traffic by September 1, 2016.

Access to 47th Street, Fayland Drive and 46th Street from 12th Ave N shall be closed during Phase 1B construction. Access to these streets shall be maintained via 13th Ave N. Seven (7) field drives, located at Sta 151+60 RT; Sta 152+10 LT; Sta 153+10 RT; Sta 156+75 RT; Sta 165+30 LT; Sta 175+30 LT; and Sta 176+30 RT, shall be closed during Phase 1B construction. Access to the adjacent fields is available from the surrounding roadway network. Phase 1A and 1B shall be constructed concurrently. Refer to Plan Note 704-P03 Winter Suspension for additional instructions on the roadway transition at Sta 157+50 that will be in place over the 2016-17 winter suspension.

Phase 2A: Work on Phase 2A shall not be allowed to begin until Phase 1A is complete. Close 12th Ave N to thru traffic from west side of County Road 17 to west side of Center Street. 12th Ave N detour established in Phase 1A shall remain in place. See Section 100 Sheets 6 & 7 for additional detour signing. Construct all underground City utilities and services. Install storm sewer system. Complete grading and street paving, sidewalks and shared use paths, driveways, signing, pavement marking, and street lighting. Access to County Road 17 and Armour Street shall be closed during Phase 2A construction. Driveways located at Sta 98+30 LT and Sta 101+15 LT shall be closed during Phase 2A construction. The Contractor shall maintain as least one of the two business driveways located at St. 101+10 RT and Sta 103+40 RT at all times during Phase 2A construction. Driveway at Sta 107+80 LT (Strata) shall be maintained at all times during Phase 2A construction.

Close County Road 17 from 12th Ave N extended north 1,100 feet. Detour southbound County Road 17 traffic to Interstate 29 as shown in the plans. Construct all underground City utilities and services. Install storm sewer system. Complete grading and street paving, sidewalks and shared use paths, driveways, signing, pavement marking, and street lighting. Access to driveway at Sta 9+90 RT (Industrial Builders) shall be maintained at all times during Phase 2A construction. Phase 2A shall be complete and opened to traffic by October 1, 2016.

Phase 2B: Work on Phase 2B shall not be allowed to begin until Phase 2A is complete. Close the intersection of 12th Ave N and Center Street to thru traffic. 12th Ave N detour to remain in place. Construct all underground City utilities and services. Install storm sewer system. Complete grading and street paving, sidewalks, driveways and street lighting. Phase 2B shall be complete and open to traffic by November 1, 2016. Access to driveway at Sta 107+80 LT shall be closed during Phase 2B construction. Refer to Plan Note 704-P03 Winter Suspension for additional instructions on the roadway transition at Sta 108+61 that will be in place over the 2016-17 winter suspension.

2017 Construction

Phase 3: Close 12th Ave N thru traffic from east of Center Street to west side of 9th Street NE. Detour thru traffic to 7th Ave N as shown in the plans. Remove temporary roadway transition at Sta 108+61 that was put in place over the winter suspension. Construct all underground City utilities and services. Install storm sewer system. Complete grading and street paving, shared use path, driveways, signing, pavement marking, and street lighting. Phase 3 shall be complete and open to traffic by August 1, 2017. Access to 7th Street NE at Sta 141+75 RT shall be closed during Phase 3 construction. The following driveways may be closed during Phase 3 construction: Sta 109+70 RT; Sta 113+65 RT; Sta 118+10 RT; Sta 124+95 LT; Sta 124+95 RT; Sta 134+20 RT and Sta 141+75 LT. The Contractor shall maintain access to the following driveways

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during Phase 3 construction: Sta 111+00 LT; Sta 113+30 LT; Sta 122+50 LT; Sta 123+75 LT and Sta 123+75 RT. Coordinate with BNSF RR on installation of the new concrete railroad crossing panels and new railroad signals at the RR crossing at Sta 128+53.

Phase 4: Work on Phase 4 shall not be allowed to begin until Phase 3 is complete. Close the intersection of 12th Ave N and 9th Street East to thru traffic. 12th Ave N detour established in Phase 3 shall remain in place. See plan sheet that details the detour signing for closure of 9th Street East. Remove temporary roadway transition at Sta 157+50 that was put in place over the winter suspension. Construct all underground City utilities and services. Install storm sewer system. Complete grading and street paving, shared use path, driveways, signing, pavement marking, street lighting, and IT conduit installation from ending point of Phase 3 to Sta 157+50. Phase 4 shall be complete and open to traffic by October 15, 2017.

Alternate Phasing Plan
The contractor may elect to submit an alternate construction phasing plan, which will include a detailed signing, striping, and lane designation layout for the entire project for review prior to the preconstruction meeting. The contractor shall be responsible for all costs associated with the traffic control changes if approved by the Engineer.

704-P02 TRAFFIC SIGNAL TEMPORARY PHASING: The Contractor shall coordinate with City of Fargo Traffic Engineering (701-241-1545) on any temporary modifications to traffic signal phasing or timing that may be necessary to facilitate work zone traffic control at the 45th Street/12th Avenue North intersection during Phase 1B.

704-P03 WINTER SUSPENSION: This project is scheduled to be constructed over two construction seasons. Any penalties that are being assessed for failure to meet interim completion dates shall continue to be assessed over the winter suspension period, until the work is complete. The following conditions shall be met for winter suspension:

- The Contractor's work operations shall be suspended for winter no later than November 15, 2016. Prior to the 2016-2017 winter suspension, 12th Ave N shall be reopened to full two-way traffic through the entire project area upon the completion of concrete paving, new sign installation, and new pavement marking in Phases 1A, 1B, 2A, and 2B. Refer to Plan Note 704-P01 for additional phasing details.
- Temporary asphalt widening and paving transitions, installation of temporary signing and flexible delineators, and temporary pavement marking will be required on the east side of Center Street (from Sta 108+61 to Sta 111+31) and on the east side of 9th Street NE (from Sta 154+80 to Sta 157+50) to facilitate traffic operations during the winter suspension period. Refer to the Temporary Roadway Transition Details in Section 20 and Section 100 for construction details and quantities.
- The Contractor shall be responsible for ensuring that drainage is maintained and accommodated over the winter suspension period. This may include temporary plugging of pipes or manholes that were installed during the 2016 work phases. The Engineer shall have final approval of the temporary drainage systems at the two transition areas. All costs associated with this work shall be included in the price bid for "Temporary Bypass Drainage System."
- Any existing signs that were removed or covered and that were not replaced with new signs shall be reset prior to winter suspension.
- The traffic signal at 45th Street shall be operational with cycle and phasing timing as required by the City of Fargo.
- Areas where topsoil was stripped and/or grading activities have occurred shall have the topsoil replaced and permanently and/or temporarily stabilized according to Section 75 of the plans.
- All equipment and construction materials shall be removed from the right of way and easements unless written permission is granted from the Engineer.
- The Contractor shall be responsible for maintaining all traffic control devices that remain in place during the winter suspension period.
- The Owner(s) reserve the right to have the Contractor fix any damage to previously completed paving and grading that might occur over the winter suspension period, at the Owner(s)' expense.

The Contractor may propose that the project is ready for Winter Suspension after the conditions for winter suspension are met. The Contractor shall notify the Engineer in writing a minimum of 5 days prior to anticipated winter suspension. The Engineer will determine whether the conditions for winter suspension have been sufficiently met.

714-P01 UNDERGROUND UTILITY INSTALLATION – EAST OF TIEBACK LEVEE: The City of Fargo Standard Specifications for Construction (revised 2015) along with these Notes shall govern the underground utility construction on this project from Sta 176+00 to Sta 203+00 (east of Tieback Levee to 45th Street).

714-P02 EDGEDRAIN NON-PERMEABLE BASE: The openings required to outlet edge drains shall be achieved by coring the openings into manholes, inlets, and reinforced concrete pipe after they have been placed in the field. All existing edge drains encountered shall be connected to proposed edge drains or structures. Jackhammering will not be allowed to create these openings. A hand-held coring machine, capable of producing a clean cut circular hole, must be used. Placement of the edge drain openings must be such that the proposed grade of the edge drain is maintained. The diameter of the hole shall be sized to allow for a tight fitting seal and shall be water tight on each side of the inlet or manhole. All costs required for the described coring shall be included in the price bid for "Edgedrain Non Permeable Base."

714-P03 CONCRETE PIPE TIES: Any concrete pipe that terminates with at least one end section shall be required to have concrete pipe ties placed on the last 3 sections of pipe including the end section. All concrete pipe placed from drainage structure (i.e. inlet, manhole, etc.) to drainage structure shall not have concrete pipe ties required.

722-P01 MANHOLES AND INLETS: All new manholes on this project that are within the roadway pavement shall be floating castings. Manhole riser sections shall not be paid for separately but shall be included in the price bid for "Manhole ____".

The bottom of inlets or manholes shall be filled with concrete up to the elevation that will accommodate the lowest invert elevation. All joints for plastic pipe and edge drain connections shall be sealed gasketed joints. All costs to accomplish this work will be included in the unit price bid for the respective inlet or manhole.

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Manhole castings and covers shall be:

- Floating: Neenah R-1955-1 or EJ 3025 or approved equal (open pickholes and "Storm Sewer" lettering).
- Manhole = Neenah R-1733 or EJ 1205 or approved equal (open pickholes and "Storm Sewer" lettering).

722-P02 INLET: Stool Grate Castings for the bid item "Inlet" shall be Neenah R-4342 or EJ 6489N or approved equal.

722-P03 INLET-TYPE 2: Castings for the bid item "Inlet-Type 2" shall be Neenah R-3067-V or EJ 7030M4 or approved equal.

722-P04 INLET-TYPE 2 DOUBLE: Castings for the bid item "Inlet-Type 2 Double" shall be Neenah R-3295-2-V or EJ 7031M4 or approved equal.

724-P01 CONNECTION TO EXISTING MAIN: This item includes all costs associated with the work to connect proposed pipe to existing pipe. The joints and/or connections shall meet the requirements of Section 1500 of the City of Fargo Standard Specifications or be per manufacturer's recommendations, as approved by the Engineer. The existing pipe material and size shown in Section 55 of the plan set is based on record drawings. Removing existing water main plugs prior to making a new connection to the existing main shall be included in the price bid for "Connection to Existing Main."

750-P01 PIGMENTED IMPRINTED CONCRETE: Develop a mix design using any size coarse aggregate specified in Section 802.01 C.2, "Coarse Aggregate" and with a 60-40 fine aggregate-coarse aggregate ratio.

Provide a pigment from the list below or provide an approved equal. To be considered an approved equal, pigments must meet the requirements of ASTM C 979.

1. Number 238 Marigold, produced by Solomon Colors, Inc. http://www.solomoncolors.com;
2. Number 5084 Spanish Gold, produced by Davis Colors http:/www.daviscolors.com

Use the same supplier for all colored concrete in this contract.

Add pigment at the ratio recommended by the manufacturer directly into the mixer along with the aggregate, cement, and water. Add pigment while the mixer is operating at mixing speed. Continue mixing for 5 to 10 minutes or between 50 and 100 revolutions.

The pattern shall be Cobblestone Random Interlocking.

Cure concrete using curing compound that meets the requirements of ASTM C 309, Type 1.

750-P02 SIDEWALK CONCRETE: The concrete thickness for the "Sidewalk Concrete" bid item shall be 5 inches.

750-P03 SIDEWALK CONCRETE AND SIDEWALK CONCRETE 4IN: Contraction joints shall be sawed in a timely manner and shall be constructed every 4.5' on the 8 or 10' wide shared use path and every 4.5' on the sidewalk. One half-inch expansion joint shall be placed at intervals not to exceed 300'. All sidewalks shall have a No. 3 deformed reinforcing bar placed 24" o.c. both ways. The bar shall be six (6) inches shorter than the width of the slab and placed accurately at one-half the depth of the slab. Plastic chairs will be used. The shared use path shall require No. 3 bars 24" o.c. both ways. Both the sidewalk and shared use path shall require four (4) No. 3 bars 10' long, centered over new utility trenches. All longitudinal and transverse joints shall be sawed. A centerline longitudinal joint shall be sawed on the 8' or wider shared use path. All items listed above shall be included in the price bid for "Sidewalk Concrete" and "Sidewalk Concrete 4In."

750-P04 DRIVEWAY CONCRETE 8IN: All driveways shall be reinforced with No. 4 bars @ 30" o.c. both ways, placed mid-depth in the slab. All driveways shall be tied to existing curb and gutter or existing sidewalk by use of keyways or No. 4 x 12" dowel bars placed mid-depth at 30" o.c. All joints are to be sawed. All items listed shall be included in the price bid for "Driveway Concrete 8In."

750-P05 DETECTABLE WARNING PANELS: Detectable warning panels shall be cast-in-place, unpainted cast iron plates manufactured by East Jordan Iron Works, Neenah Foundry, or an approved equal.

752-P01 FENCE REMOVE AND RESET: The Contractor shall coordinate with the City of Fargo Landfill Supervisor, Paul Hanson, 701-730-8705, prior to removing any fence adjacent to the City of Fargo landfill.

762-P01 PAVEMENT MARKING: Pavement marking will not be measured for payment unless changes are made in the field. Payment for pavement marking will be at contract plan quantity.

762-P02 PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED: The 7-inch contrast pavement marking used for the broken white skip lines from Sta 122+27 to 133+54 shall be paid for as "Preformed Patterned Pvmt Mk 8In Line-Grooved."

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770 - P01 The contractor shall furnish shop drawings for approval within 21 days after awarding of the contract. After approval of shop drawings, the contractor will have 14 days to furnish evidence to the engineer that all required materials have been ordered.

770 - P02 Two inch diameter rigid conduit (innerduct): Innerduct shall be schedule 40, smooth outside, smooth inside, controlled outside diameter at 2.375", inside diameter of 2.047", minimum wall thickness of .154" and color "red".

Four inch rigid conduit (innerduct): Innerduct shall be schedule 40, smooth outside, smooth inside, controlled outside diameter at 4.5", inside diameter of 3.498", minimum wall thickness of 0.237" and color "red". Innerduct shall be installed at a minimum depth of 24" below finished grade. Route innerduct parallel to the curb line as shown on plan. A divergence in innerduct location shall be verified with project engineer and shown on contractor's set of plans with a copy to be provided to the project engineer upon completion of project. Innerduct will be measured by the linear foot. Measurement will be from center of base to center of base/pull box/feed point. Conduit will not be allowed as an alternative. The method of installation and required trace wire shall be included in the price bid for two inch diameter rigid conduit. It shall be acceptable for the street lighting innerduct and traffic signal innerduct/conduit to be installed in a shared trench.

Duct seal all innerduct/conduit entering or exiting foundations, feed points and pull boxes.

770 - P03 Conductor: The conductor between lighting standards, pull boxes, and feed points shall be:

Feed Point (A):

Circuit 1 (West)	Circuit 2 (East)
(2)#2 RHW	(2)#2 RHW
(1)#4 RHW	(1)#4 RHW

Feed Point (B):

Circuit 1 (West)	Circuit 2 (East)
(3)#6 RHW	(3)#6 RHW

Feed Point (C):

Circuit 1 (West)	Circuit 2 (East)
(3)#6 RHW	(3)#6 RHW

All conductors shall be continuously color coded. All conductors shall be installed in innerduct.

Conductors within standards, between distribution conductors and luminaires shall be #10 stranded copper 600-Volt, type RHW. All standards shall have individual conductor runs and fuses for each fixture.

Conductor connections in street light bases shall be Tyco Electronics Gelcap SL Splice Cover Kit with connector. New connectors and fuses are required in all new and any existing street lights with new innerduct and conductor. All other conductor splices shall be, UL listed, with powergel sealant type connections meeting all codes for desired application.

770 - P04 Concrete Foundation: Location and size of concrete foundation shall be as shown on the street lighting schedule. Column form shall be used for a minimum of the top 18". Foundation locations shall be staked by the project surveyor. Top elevation shall be 3" above finished grade. Any change in the location or elevation shall be verified with the project engineer. Hand dug foundations may be required in some cases due to other underground utilities. Costs for hand dug foundations shall be included in the price for the lighting system. Column forms shall be removed before seeding.

770 - P05 40' Standard: Millerbernd, 40' stainless steel standard with breakaway "H" base, 2-3/8" OD slipfitter, frost finish, no mast arm.

770 - P06 Luminaire: Luminaire shall be American Electric Lighting, Autobahn Series ATB2, LED with drive current of 1000mA, 215W, multi-Volt, 4000K, roadway type II optics, color gray with no photocontrol receptacle, and NEMA label.

770 - P07 Feed Point: Feed point shall be pad mounted. The cabinet shall be 15"W x 36"H x 12"D with a NEMA 3R rating. The cabinet shall be constructed of 16 gauge #304 stainless steel, stainless steel hardware and a padlockable stainless steel handle with 3-point latch operation, continuous hinged deadfront, 2" drip shield, photocell window with gasketed lexan located on side and back of pedestal cabinet. All circuit breakers shall be rated 22,000 AIC. The pedestal cabinet shall also include a factory installed, meter trim which meets the requirements of the local utility company.

Meter to be provided by local utility company. All exposed conduit shall be 2" galvanized steel. Concrete pad foundation shall be included in the price bid for feed point.

Feed Point: Prefabricated feed point enclosure to be assembled by States Electric or by Milbank Manufacturing Company, UL 508 listed, service entrance rated.

772-P01 TRAFFIC SIGNALS
All Traffic Signal Items must be installed following section 4200 of the 2015 City of Fargo Specifications.

All IT Conduit items must be installed following section 4200 of the 2015 City of Fargo Specifications.

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CITY OF WEST FARGO (STA 68+00 - 175+32) NOTES

100-W01 WARRANTY: All water main and sanitary sewer work shall be warrantied for a minimum of 1 year from the time of final project acceptance by the City of West Fargo. This warranty shall provide all materials, labor, equipment, shipping, etc. necessary to diagnose, remove, and repair or replace any item under this warranty during the warranty period. Any manufacturer's warranties above and beyond this will remain in effect.

100-W02 DIMENSIONS: All underground dimensions are to right of way line, property line, center of pipe, center of structure, edge of sidewalk or back of curb unless noted.

100-W03 REMOVED AND SALVAGED ITEMS: All salvaged items noted to become property of the City of West Fargo shall be delivered to the Public Works Building at 810 12th Avenue Northwest.

202-W01 REMOVAL OF EXISTING PIPE: Backfill shall be done with existing excavated clays approved by the Engineer.

202-W02 REMOVED CASTINGS, COVERS, AND GRATES: All castings, covers, and grates from removed manholes and catch basins shall be delivered to the City of West Fargo.

202-W03 ABANDONING EXISTING PIPE: Any type of pipe abandonments (i.e. water main, storm sewer, and forcemain) shall be paid for under the “Abandon Storm Sewer” item. This shall involve filling the existing pipe completely with controlled density fill or sand and capping or plugging ends.

202-W04 ABANDON GATE VALVES: Abandoning existing gate valves along the pipe abandonment shall be paid for under the “Abandon Valve Box” item. This shall involve removing the top section of the cast iron valve box and filling the valve box with controlled density fill or sand.

202-W05 ABANDONING CULVERTS: The "Plug Pipe - All Types & Sizes" item shall be full compensation for abandoning existing culverts. It shall involve thoroughly cleaning the existing culvert, removing any existing flared end sections, plugging both ends with 3,000 PSI concrete, drilling an opening in the top of the culvert, and completely filling the culvert with 3,000 PSI sanded grout with a shrinkage compensating admixture such as Sika Intraplast-N, BASF Tetraguard AS20, or approved equal. This work is subject to inspection by the Southeast Cass Water Resource District (Brady Woodard, 701-282-4692, bwoodard@mooreengineeringinc.com).

202-W06 FENCE REMOVALS: The existing fence to be removed is industrial ornamental aluminum 6' high Style 202 by Jerith, with 1" pickets, posts approximately 6 feet on center, 4 foot deep concrete footings, double drive gate, and pedestrian gate. The removals of the fence shall be paid for under the "Remove Existing Fence" item.

202-W07 SANITARY LIFT STATION ABANDONMENTS: Sanitary lift station abandonments of the wet well shall be paid for under the “Abandon Well” item. Sanitary lift station abandonments of the check valve manhole shall be paid for under the “Abandon Well” item. The sanitary lift stations are SA18 (8th Avenue Northwest and east of Armour Street Northwest), SA29 (east side of Center Street in northwest corner of Schiele Enterprises Inc.), SA32 (northeast quadrant of 12th Avenue Northwest and Armour Street Northwest), SA37 (12th Avenue Northeast and east of Drain 45).

1. SA18, SA29, SA32, SA37 wet wells shall involve:
   a. Contact electrical service provider, disconnect power from the power source, remove electrical wiring from structure and plug holes, and terminate electrical wiring.
   b. Remove control cabinet and telemetry antenna from lid of wet well.
   c. Remove lid (and iron vent pipe).
   d. Remove submersible pumps, ductile iron piping, fittings, etc. within wet well and plug inverts of any pipes entering or leaving the wet well.
   e. Deliver pumps to City.
   f. Remove top section of wet well barrel or cut barrel down 4 feet below surface.
   g. Fill wet well with sand up to the top of the barrel portion remaining.
   h. Backfill and compact from top of barrel to finished ground with clay to 95% density.
2. There is no check valve manhole at SA29. SA18, SA32, SA37 check valve manholes shall involve:
   a. Remove lid of check valve manhole.
   b. Remove valves, ductile iron piping, fittings, etc. within check valve manhole and plug inverts of any pipes entering or leaving the check valve manhole.
   c. Remove top section of check valve manhole barrel or cut barrel down 4 feet below surface.
   d. Fill check valve manhole with sand up to the top of the barrel portion remaining.
   e. Backfill and compact from top of barrel to finished ground with clay at 95% density.
   f. Spread 4” of topsoil over disturbed area.
   g. Seed and hydromulch the disturbed area.

202-W08 STORM LIFT STATION ABANDONMENTS: The storm lift station abandonment of SM43 (east side of Center Street in northwest corner of Schiele Enterprises Inc.) shall be paid for under the “Abandon Well” item. The lift station is being converted into a storm sewer manhole. It shall involve:

1. Contact electrical service provider, disconnect power from the power source, remove electrical wiring from structure and plug holes, and terminate electrical wiring.
2. Remove control cabinet and telemetry antenna adjacent to structure.
3. Remove lid-mounted vertical turbine pump.
4. Seal hole in lid with H20 load rated steel plating bolted to lid or equivalent sealing.
5. Deliver pump to City.
6. Remove iron vent pipe on lid and plug hole with 3,000 PSI concrete, supported from bottom with mesh or plating to support H20 loading.
7. Remove ladders, ductile iron piping, fittings, etc. within structure.
8. Pour a cradle on floor of structure (using 3,000 PSI concrete, 20:1 side slopes) to channel water from existing northeast invert to new west invert.

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12TH AVENUE NORTH RECONSTRUCTION

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202-W09 ACCOMMODATION OF EXISTING SANITARY AND STORM: The Contractor shall accommodate and maintain the functionality of the existing sanitary and storm sewer systems that are being removed, abandoned, etc. until the new sanitary and storm systems are functional. The Contractor shall devise temporary pumping and bypassing plans as needed, and Engineer shall provide Contractor with maps showing the tributary areas of all sanitary and storm sewer systems. New sanitary and storm systems can be put into operation immediately upon installation. Any pumping, temporary bypassing, etc. required on the existing systems prior to the new sanitary and storm systems becoming functional shall be included in the "Pumping Equipment" item for the sanitary system and "Temporary Bypass Drainage System" item for the storm system.

256-W01 RIPRAP: Riprap shall be Grade I. Fabric shall be Geosynthetic for Riprap (Type RR) and shall not be paid for separately. These shall be paid for under the "Riprap Grade I" item.

714-W01 STORM SEWER PIPE: Reinforced concrete storm sewer pipe shall be gasketed in accordance with ASTM C443.

714-W02 LARGE DIAMETER STORM SEWER PIPE: All 42" diameter and larger R.C.P. storm sewer shall have POPIT plugs installed in pipe lift holes (i.e. no concrete plugs).

714-W03 STORM SEWER OUTFALLS: Storm sewer outfalls shown as end sections shall be R.C.P flared end sections without trash racks and shall be paid for under the respective End Section item. Storm sewer outfalls shown as check valves shall be a Tideflex TF-1 Series duckbill check valve or equal. Fasten outside flange to last pipe with ¾" diameter stainless steel Hilti Kwik Bolt 3 expansion anchors, embedded a minimum of 6" into last pipe. Check valve shall be made of neoprene or HPDM and have a retaining ring. The cost for these check valves shall be included in the respective End Section-Corr. Steel item.

714-W04 STORM SEWER UNDER RAILROAD: The storm sewer pipe at the BNSF crossing shall be bored, 54" steel, min. yield strength of 35,000 psi, 0.719 inch wall thickness, welded joint, and non-coated. This shall be paid for under the "Pipe Steel Smooth Wall .719 54In Bored" item and include the pipe and the boring. Also included in the Pipe item shall be R.C.P. to steel couplers for each end.

714-W05 CASS COUNTY DRAIN 45 - CONCURRENT PROJECT: The existing twin culverts at Drain 45 shall be removed and new twin box culverts shall be installed by Southeast Cass Water Resource District. The contact is Brady Woodard, 701-282-4692, bwoodard@mooreengineeringinc.com.

714-W06 CASS COUNTY DRAIN 45 - TEMPORARY PUMPING: A cofferdam, temporary pumping, etc. may be needed to install storm sewer outfalls in Drain 45 during wet conditions. A high water elevation of 895.00 can be anticipated during large rain events. This shall not be paid for separately but shall be included in the unit price for other pay items.

714-W07 STORM SEWER IN MAGELLAN PIPELINE EASEMENT - NOTIFICATION TO MAGELLAN: A Magellan company representative shall be on-site while storm sewer installation is occurring within the Magellan Easement. Provide 48 hours notice (exclusive of weekends and holidays) to determine the location and approximate depth of the Magellan pipeline. No excavation shall be commenced without prior written approval from Magellan and verification by Magellan of the location and approximate depth of its pipelines. Included in the notification to Magellan shall be information as to the type, size, and weight of construction equipment that will be used over or in the vicinity of the pipeline. Magellan's local contact is: Paul Klabunde, 902 Main Avenue East, West Fargo, ND 58078, 701-793-8377, paul.klabunde@magellanlp.com.

714-W08 STORM SEWER IN MAGELLAN PIPELINE EASEMENT - MATERIALS AND EQUIPMENT: Materials stockpiling and equipment storage within the Magellan Easement shall not be allowed overnight in order to keep the easement clear for operations, maintenance, inspection, and emergency access.

714-W09 STORM SEWER IN MAGELLAN PIPELINE EASEMENT - WARNING TAPE: 6" wide McMaster-Carr No. 8288T12 or equal warning tape shall be placed directly over and at least 15 inches above the top of all storm sewer within the Magellan Easement. All cost for labor, equipment and materials necessary to complete the work shall be included in the price bid for storm sewer pipe.

714-W10 CENTER STREET STORM SEWER - UTILIZATION OF ROADWAY: The Contractor may close the eastbound right turn lane of Center Street when installing storm sewer along the east side of Center Street to allow for backfill placement, material storage, equipment parking, etc. Closure shall follow NDDOT D-704-17, but exclude the W3-5-48, R2-1-48, W16-2-30, W20-7-48, R2-1a-24, G20-55-96 and W20-4-48 signs. This may not interfere with the overall work zone traffic control plans for the project. Contractor shall use care to not damage the existing pavement surface through use of track pads, wood sheets or planks, rubber tires, fabric or other surface protectants, etc. Any damage to existing pavement shall be repaired at the Contractor's expense. This shall not be paid for separately but shall be included in the unit price for "Pipe Conduit 27In".

714-W11 CENTER STREET STORM SEWER - POLYPROPYLENE PIPE AND BORING: The bored polypropylene (PP) storm sewer along Center St. under the existing driveway shall be paid for under the "Pipe Conduit 27In-Jacked Or Bored" item and shall include the boring and pipe. The remaining PP pipe along Center St. not to be bored shall be paid under the "Pipe Conduit 27In" item. All PP pipe specified shall have a smooth interior, annular exterior corrugations, and be joined with a gasketed integral bell and spigot joint. Polypropylene compound for pipe shall be impact modified copolymer meeting the material requirements of AASHTO M330, Section 6.1 for all sizes; ASTM F2736, Section 4 for 12 inch through 30 inch; ASTM F2881, Section 5 for 36 inch through 60 inch.

714-W12 DRAINAGE: When the existing drainage system becomes inoperable, the contractor shall provide sufficient temporary pumping and/or drainage facilities to keep the right-of-way and the adjacent areas which drain to the right-of-way drained. The cost for maintaining the drainage shall be included in the price bid for other items.

714-W13 CONNECT TO EXISTING STORM SEWER MAIN: This shall include the connection to existing storm sewer at Interstate Assembly Systems and at the New Cass County Road 19. At Interstate Assembly Systems this work shall involve installing a new manhole on the existing main. At the New Cass County Road 19 this work shall involve removing the existing concrete plug and connecting to the existing main. This shall be paid under the "Connection To Existing Main" item.

714-W14 CONCRETE PIPE TIES: Any concrete pipe that terminates with at least one end section shall be required to have concrete pipe ties placed on the last 3 sections of pipe including the end section. All concrete pipe placed from drainage structure (i.e. inlet, manhole, etc.) to drainage structure shall not have concrete ties required.

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12TH AVENUE NORTH RECONSTRUCTION

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722-W01 SANITARY MANHOLES: All 48" diameter sanitary manholes shall be paid for under the "Manhole Sanitary" item. All 60" diameter sanitary manholes shall be paid for under the "Manhole Special" item.

722-W02 SANITARY MANHOLE CASTINGS AND COVERS: Sanitary structure castings and covers west of the Sheyenne Diversion Tieback Levee shall be:

Within the 12th Avenue pavement = Neenah R-1955-1 or East Jordan 3025 (solid cover with “Sanitary Sewer” lettering, gasket, and two closed pickholes).

Outside the 12th Avenue pavement = Neenah R-1733 or East Jordan 1205 AGS (solid cover with “Sanitary Sewer” lettering, gasket, and two closed pickholes).

722-W03 ADJUSTING RINGS OUTSIDE ROADWAY: Adjusting rings on manholes and catch basins outside the roadway shall only have plastic or rubber rings.

722-W04 CHIMNEY SEALS: All new sanitary sewer manholes, storm manholes, catch basins, and inlets shall have external chimney seal. The chimney seal shall be those manufactured by Cretex, Strike Products, Sealing Systems, Inc. (Infi-Shield with stainless steel bands), or equal. This shall not be paid for separately but shall be included in the respective manhole, catch basin, or inlet item.

722-W05 P.V.C. PENETRATION: All P.V.C. storm sewer pipe penetrations to manholes or catch basins shall utilize a rubber boot and stainless steel clamp.

722-W06 MANHOLE ADJUSTMENTS: All manhole adjustments shall have all rings continuously grouted (concrete rings) or sealed (plastic or rubber rings) between each and continuously grouted on the outside (6” wide and 6” below all rings). The area between rings and casting shall be continuously grouted (i.e. casting shall be continuously supported throughout). Rubber rings shall be a composite material made of recycled rubber tires, fortifying additives, and urethane binders.

Rubber rings shall meet the following minimum requirements:

1. Density: 64.214 lbs/c.f., ASTM D3574-05, TEST A
2. Durometer Hardness: Molded surfaces; 77A±5, ASTM D2240-05
3. Tensile Strength: 304 PSI (not less than 145 PSI), ASTM D412-06
4. Heat Ages Properties: 70 hours at 158° F, 3 hours at 300° F, ASTM D573-04
5. Durometer Retained: 100%
6. Tensile Strength Retained: 100%
7. Compression Deformation: 100%
8. Low Temperature Brittleness:
   - 5 hours exposure: No signs of cracks, ruptures or degradation -40°C
   - 24 hours exposure: No signs of cracks, ruptures or degradation -40°C

722-W07 MODIFY MANHOLE: The “Modify Manhole” item will be used for plugging one or more inverts in an existing sanitary or storm sewer manhole. Regardless of the number of inverts plugged in a manhole, one unit will be paid for the particular manhole having invert(s) plugged. Sanitary manholes shall be plugged using an internal PVC plug with stainless steel clamps. Storm sewer manholes shall be plugged using rebar or steel mesh and 3,000 P.S.I. concrete.

722-W08 CONNECTION TO EXISTING SANITARY AND STORM MANHOLES: Existing sanitary manhole connections are at 4th St. NW, Strata, 7th St. NE, Center St. and 8th Ave. NW. This work shall involve coring the manhole wall and installing a rubber boot with stainless steel clamps. Any disturbance of existing interior coatings which creates exposed concrete shall be repaired by applying the same coating or superior over the exposed area and overlapping existing coatings 6” minimum. Existing storm manhole connections are at 7th St. NE and Center St. This work shall involve coring or breaking out the structure wall and sealing around pipe penetration with 3,000 PSI concrete. All connections to existing sanitary and storm manholes shall be paid under the “Manhole Storm Connection” item.

722-W09 ABANDON SANITARY AND STORM MANHOLES: Existing sanitary, forcemain, and storm manholes shown to be abandoned shall have casting, rings and cone section removed. The remainder of the existing structure shall be filled with sand. The castings shall be delivered to the City of West Fargo. Sanitary and forcemain manhole abandonments shall be paid for under the “Abandon Sanitary Sewer Manhole” item and storm manhole abandonments shall be paid for under the “Abandon Storm Sewer Manhole” item.

724-W01 PHASING: Installation of sanitary sewer, water main, and storm sewer shall conform to the construction phasing set forth in Section 100 of the plans.

724-W02 CONNECT TO EXISTING SANITARY SEWER MAIN: This shall include the connections to existing sanitary sewer at Public Works, the unplatted land west of the Sheyenne River, Strata, Quality Garage Door, Interstate Assembly Systems, Armour St. NW & 8th Ave. NW intersection, KRC Enterprise and the EX-SA18 lift station. At Public Works, Armour St. NW & 8th Ave. NW intersection and KRC Enterprise, this work shall involve installing a new manhole on the existing main. At the EX-SA18 lift station the work shall involve tying into an existing manhole. All other connections to the main shall involve installing a Strong Back RC Series Repair Coupler by Fernco (i.e. solid sleeve). This shall be paid under the “Connection To Existing Main” item.

724-W03 TELEVISING SANITARY MAINS: All sanitary sewer mains and sanitary sewer service lines installed or repaired under this project shall be televised by the Contractor. The Contractor shall assure that the lines are free of debris prior to televising, i.e. no dirt, stone, gravel or other foreign materials other than joint lubricant shall be present. The Contractor shall provide adequate water in the sanitary sewer service lines prior to televising to view deficiencies and confirm flow direction. Distance measurements shall be provided with the televising so that deficient locations may be found adequately. Videotapes shall be produced during televising showing clearly pipe walls, water flow (if any), joints and distance from start of each televising run in tenths. The Contractor shall provide a copy of the televised tape to the Engineer along with an accurate log showing distances along televised run to structures, wyes, or any distresses. Any portion of the system found not to be in compliance with these specifications shall be reconstructed in accordance with these specifications and re-televised at the Contractor's expense. The Contractor shall contact the Engineer at the point in which the sanitary sewer lines have been laid or repaired. At that point, those repaired lines shall be re-televised by the Contractor. The Contractor shall allow adequate time for televising of the sanitary sewer lines prior to any undertaking of subgrade preparation over said sewer lines. The item “Video Inspection - Underground Pipe” will be considered a Lump Sum bid price to complete the televising work on all sanitary sewer installed on this project.

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724-W04 SANITARY SEWER CLEANOUTS: The "Pipe Cleanout" item shall be full compensation for all labor and materials necessary for sanitary sewer cleanouts as shown on the plans. Casting and lid shall be labeled “Sewer” and be Neenah R-1973 or approved equal .

724-W05 SANITARY SEWER SERVICE WYES: The "Sanitary Sewer Service Connection" item shall be full compensation for all labor and materials necessary for wye connections and fittings for sanitary services on sanitary mains in the size and type as shown on the plans. Type shall match the type of main.

724-W06 SANITARY SEWER RISERS: The 1 1/2" forcemain to the west of the Strata storage building on the north side of 12th Avenue Northwest shall require a double riser in order to pass below the large storm sewer main. The first riser shown is at the main (per the typical detail) and the second riser shown is at the property line.

724-W07 SANITARY SEWER BORING AND CASING: For sanitary sewer bores, the pipe, casing (if any), and boring shall be paid for separately. All borings, regardless of size or type, shall be paid for under the "Bore Sanitary Sewer Pipe" item. Casings shall be paid for under the "Casing Pipe 20In" item for the 20" railroad crossing and the "Casing Pipe 36In" item for the 36" Sheyenne River crossing. Sanitary sewer pipe shall be paid for under the respective pipe item.

724-W08 SANITARY SEWER UNDER RAILROAD: The sanitary sewer pipe (i.e. carrier pipe) within the BNSF right of way shall be 12In PVC SDR 26, 0.481 inch wall thickness, gasketed joint and shall be paid for under the “12In Sanitary Sewer Pipe” item. Casing shall be steel, min. yield strength of 35,000 psi, 0.375 inch wall thickness, welded joint & non-coated and shall be paid for under the “Casing Pipe 20In” item. Also included in the Casing item shall be casing spacers/insulators within the casing and pull-on end seals with stainless steel clamps for each end to seal the casing to the carrier pipe.

724-W09 TRACER WIRE FOR SEWER SYSTEMS:

1. Install electrically continuous tracer wire with access points as described herein to be used for locating pipe with an electronic pipe locator after installation. Tracer wire shall be installed on all sewer mains and services and shall be considered incidental to the pipe.
2. Contractor shall perform a continuity test on all tracer wire in the presence of the Engineer or the Engineers representative. If the tracer wire is found to be not continuous after testing, Contractor shall repair or replace the failed segment of the wire at their own expense.
3. Tracer Wire Material:
   a. Tracer wire to be twelve (12) gauge minimum number 12 CCS, high strength, copper clad, steel core wire with 30-mil (min.) thermoplastic insulation recommended for direct burial with a breakage strength of 300 pounds or greater.
   b. Tracer wire color shall be green for all wastewater construction.
   c. Wire shall have 2,700 pounds minimum breakage strength for directional drilling, augering, or boring applications.
4. Tracer Wire Connectors:
   a. Splices in the tracer wire shall be connected by means of a slit bolt or compression type connector to ensure continuity. Wire nuts shall not be used. A waterproof of corrosion-proof connector for direct bury applications shall be used. Wire connectors to be Copperhead Snake Bite Locking Connectors, 3M DBR, Trace safe No-Strip Connector, or approved equal.
5. Tracer Wire Access Boxes:
   a. Tracer wire access box shall be an adjustable 18” box with removable cover. The removable cover shall have green lettering labeled SEWER. The box shall be Tracer Wire Access Box by Copperhead, Valvco, Inc. or equal, installed at each proposed access point.
6. General Requirements For Tracer Wire Installation:
   a. The wire shall be installed in such a manner as to be able to properly locate all mains without loss or deterioration of signal or without the transmitted signal migrating off the tracer wire.
   b. Tracer wire shall be installed in the same trench and inside bored holes and casing with pipe during pipe installation. The tracer wire shall be securely bonded together at all wire joints with an approved watertight connector to provide electrical continuity and it shall be accessible at all tracer wire access points.
   c. At the point of connection between cast or ductile iron mans, with any non-iron main, the tracer wire shall be properly connected to the iron pipe with a cad weld or approved equivalent. Tracer wire welds shall be completely sealed with the use of an approved mastic type sealer specifically manufactured for underground use. Mastic shall be applied in a thick coat a minimum of 2 inches thick and shall be protected from contamination by the backfill material with the use of a plastic membrane.
   d. No breaks or cuts in the tracer wire or tracer wire insulation shall be permitted.
   e. Zinc or magnesium anode grounds are to be spliced in every one thousand (1,000) feet and buried at the same elevation as the main in undisturbed soil.
   f. At all main end caps, a minimum of 6 feet of tracer wire shall be extended beyond the end of the pipe, coiled and secured for future connections. The end of the tracer wire shall be spliced to the wire of a zinc or magnesium anode and properly grounded.
   g. For directional drilling, augering or boring installations, four #12 tracer wires shall be installed with the pipe and connected to the tracer wire at both ends, or cad welded to the existing iron pipe at both ends.
   h. Spliced connections between the main line tracer wire and branch connection tracer wire shall not be allowed on sewer.

724-W10 SANITARY SEWER FORCEMAIN: The "Sanitary Sewer 4In" item shall be used for the 4" PVC DR11 forcemain from Central Livestock (just west of the Sheyenne River). The "Water Line 1 1/2In PVC" item shall be used for the 1.5" PVC DR11 forcemain from just west of the Strata storage building. The "18In Sanitary Sewer Pipe" item shall be used for the 18" PVC DR 18 C905 forcemain along the west side of Drain 45. The "6In Sewer Service Pipe" item shall be used for the 6" PVC DR11 forcemain from Interstate Assembly Systems.

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724-W11 ARMOUR STREET SANITARY SEWER IMPROVEMENTS: The existing sanitary lift station near Armour Street Northwest and 8th Avenue Northwest shall be abandoned and new gravity sanitary sewer will be installed from the lift station area to 12th Avenue Northwest. The 10" HDPE DR 26 sanitary sewer pipe and the directional drilling to install the pipe shall be paid for under the "15In Sanitary Sewer Pipe" item. The street removals for the bore pits, the street patching around the bore pits, the inlet protection devices for the affected inlets, and the work zone traffic control devices in the work area shall be paid for under the "Patching" item.

1. Street removals required for this work are not shown in the Section 40 sheets but are described here. They shall consist of sawcutting the existing asphalt full depth and removing the existing pavement section (5" asphalt, 9" aggregate base, stabilization fabric). Contractor shall use care to not damage the existing pavement surface through use of track pads, wood sheets or planks, rubber tires, fabric or other surface protectants, etc. Any damage to existing pavement outside the bore pits shall be repaired at the Contractor's expense.
2. Street patches required for this work are not shown in the Section 60 sheets but are described here. They shall be an asphalt-surfaced patch section consisting of (from bottom to surface): subgrade preparation to 95% density, reinforcement fabric, 9" NDDOT Class 5 gravel, 4" NDDOT Class Superpave FAA 45 asphalt base course, tack coat, and 2" NDDOT Class Superpave FAA 45 asphalt wear course. The sides of the existing pavement shall be tacked prior to asphalt base and asphalt wear installation. The conversion between tons and square yards shall be 0.055 ton/sy-in (i.e. 110 lb/sy-in).
3. Inlet protection devices required for this work are not shown in the Section 76 sheets but are described here. These shall be placed:
   a. (9) on Armour Street Northwest.
   b. (2) on 11th Avenue Northwest.
   c. (2) on 9th Avenue Northwest.
   d. (2) on 8th Avenue Northwest, west of Armour Street Northwest.
   e. (2) on 8th Avenue Northwest, east of Armour Street Northwest.

   and shall be FLEXSTORM Inlet Filters by Advanced Drainage Systems, Inc. or equal.
4. Work Zone Traffic Control devices required for this work are not shown in the Section 100 sheets but are described here. They include:
   a. (6) Device A - "Road Closed To Thru Traffic" (60"x30" R11-4) sign mounted on Type 3 barricade. These be placed in middle of roadway on 8th, 9th, 10th, and 11th Avenues Northwest at Riverwood Drive Northwest; on Armour Street Northwest at Riverwood Drive Northwest; on 8th Avenue Northwest at Center Street.
   b. (7) Device B - "Road Closed" (48"x30" R11-2) sign mounted on Type 3 barricade. These shall be placed in driving lane on 8th, 9th, 10th, and 11th Avenues Northwest at Armour Street Northwest; on Armour Street Northwest at 8th Avenue Northwest and at 12th Avenue Northwest; on 8th Avenue Northwest just east of the existing sanitary lift station;
   c. (7) Device C - Type 3 barricade. These shall be placed next to (i.e. to the left) of all Device B's.

Contractor shall coordinate operations to ensure that local residential traffic in the area south of 12th Avenue Northwest, east and north of the Sheyenne River, and west of Armour Street Northwest can enter and exit the local area via 8th Avenue Northwest to Center Street (east) or Riverwood Drive Northwest to 12th Avenue Northwest (north). Contractor shall also ensure that businesses on Armour Street Northwest can enter and exit their business via 8th Avenue Northwest (south) or 9th, 10th, or 11th Avenue Northwest (west). Business access may require temporary aggregate surfacing of the bore pits to allow business traffic to pass, which shall not be paid for separately. Construction notices shall be hand delivered to front doors, emailed, or standard mailed to mailboxes to inform residents and businesses of the Contractor's operations and how to enter and leave the area while work is in progress.

724-W12 WATER MAIN PIPE: All PVC water mains 4"-12" shall be C900 Class 150 DR 18 or C905 Class 235 DR18 for 14" or greater.

724-W13 WATER MAIN ELEVATIONS: Elevations of existing water main shown on the plans are approximate. New water main shall be installed with a minimum depth of 7 1/2 feet from final grade to top of pipe.

724-W14 WATER MAIN FITTINGS: Ductile iron fittings with joint accessories are used as a basis for weight payment for all mechanical joint fittings. Weights are taken from the 2011 Tyler Utilities Union-Tite Class 153 catalog. All fittings shall be neatly wrapped with 8-mil polyethylene plastic and securely taped. Stainless steel bolts shall be used. All water main joints shall be push-on fittings, except for the water main adjustment detail or when a joint must be mechanically restrained in accordance with the contract documents or as directed by the engineer. Where applicable, mechanical joints shall consist of megalugs or equal, stainless steel bolts, and poly wrap.

724-W15 BOLTS AND NUTS: All hydrants, valves, fittings, etc. shall have 304 stainless bolts and nuts.

724-W16 HYDRANTS: Hydrants shall be Waterous WB-67 with 5 1/4" valve opening, two 2 1/2" National Standard Thread 7532 hose nozzles and one 4 1/2" National Standard Thread 40524 pumper nozzle. Hydrant markers shall be non-spring type by Darley or equal. Spin hydrant nozzle to face adjacent back of curb.

724-W17 WATER SERVICES: Copper water services shall be Type K Annealed. Curb stops shall be flared ball valve Minneapolis pattern type McDonald 6104 and 6104-22 or Ford B22 or B44. Curb boxes shall have 1" tap pipes and a threaded base. The top of the curb box shall be installed to match finished grade. Corporation stops shall be flared style plug A.Y. McDonald 4701 and 4701-22 or Ford F600 and F1000. Water service pipe shall be paid under the "1In Cu-Type K" item, corporation stops under the "Corporation Cock & Swivel Bend 1In" item, and curb stops and boxes under the "1In Curb Stop & Box-New Service" item.

724-W18 WATER MAIN SHUT DOWNS: The Contractor will be responsible for the following:

1. Coordination with city on gate valve locations.
2. Coordination with Public Works Department for cleaning and operating if required. Contact Ryan James at 701-433-5400.
3. Notify all properties affected by shutdown a minimum of six hours prior to shut down. Notification shall be in writing. Any shutdowns shall be after 9:00 am and prior to 4:00 pm. If shutdown exceeds 6 hours temporary services must be provided. Included in water items.
4. When using Yelomine and other approved temporary water lines (not hydrant hosing), temporary lines shall be flushed, disinfected, and bacteria tested prior to activation.
5. Any temporary lines shall be located to avoid walks and drives. If avoidance is not possible temporary ramps shall be provided to allow traffic over temporary lines. Included in water items.
6. Existing service lines shall be worked around as much as possible to maintain service until hookup is necessary.

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724-W19 WATER MAIN FLUSHING: Before putting shut down main line in service, the line shall be tested for bacteria twice within 48 hours per the ND State Health Department and pass both tests. Also, the line shall be flushed from both ends during City hours (7:00am - 4:00pm) and have a city representative there at time of flushing. All hydrant leads shall be flushed a minimum of 5 minutes or until water is clear. This shall be completed after flushing main line.

724-W20 CONNECT TO EXISTING WATER MAIN: This shall include the areas where existing water main is being adjusted for storm sewer crossings at Pro Pallet, Center Street, Drain 45, and 9th St. NE. This work shall involve cutting existing pipe and installing a MACRO coupling by Romac. This shall be paid under the “Connection To Existing Main” item.

724-W21 TAPPING SLEEVES AND VALVES: The Tapping Sleeve & Valve items will include a ductile iron mechanical joint tapping sleeve, gate valve, and gate valve box installed at the location shown in the plans. No separate payment for “Connection to Existing Main” will be made.

724-W22 ABANDON GATE VALVES: Abandoning existing gate valves along the forcemain abandonment shall be paid for under the “Abandon Valve Box” item. This shall involve removing the top section of the cast iron valve box and filling the valve box with controlled density fill or sand.

724-W23 REMOVE GATE VALVES: Removing existing gate valves shall be paid for under the “Remove Gate Valve & Box” item. This shall involve removing the existing valve and box from the site and disposing of the valve and box

724-W24 WATER MAIN BORING: For water main bores, the pipe and boring shall be paid for separately. Water main borings shall be paid for under the respective boring item. Water main pipe shall be paid for under the respective pipe item

740-W01 POLYSTYRENE INSULATION BOARD: Provide insulation per general details. Incidental to storm sewer item.

752-W01 TEMPORARY SAFETY FENCE: Where excavations or open pits are to remain unbackfilled overnight, the Contractor will be required to encircle the open area by a standard 4' high, orange safety fence, or equal-type fencing. 1000LF was estimated for this application. Other safety fence shall also be installed per traffic control sheets. Some other fence may be required as directed by the engineer. All payment shall be under "Temporary Safety Fence" item.

754-W01 REMOVE EXISTING SIGNS: Sign assemblies shown for removal shall be paid for under the “Salvage Sign-Type D". This includes taking care to not damage the sign post, anchor, and sign during removal, then delivering to the City.

970-W01 PROJECT PERSONNEL: The Contractor shall be required to have an International Society of Arboriculture (ISA) certified arborist or other certified individual that is knowledgeable of trees and proper planting conditions on the project. Should any field conditions be deemed inappropriate for the specified trees, it is the Contractor's responsibility to submit a written proposal for appropriate tree substitutions. The Contractor shall have within his/her company an individual who is a Certified Herbicide Applicator. The cost is included in the bid price of the trees.

970-W02 PLANT SIZES AND TYPES: Trees shall be 4 inch caliper minimum at 210 12th Ave. N.W. and 1.5 inch minimum at the Roundabout. Shrubs shall be 3 foot minimum. Any plant which does not meet the specified minimum size shall be rejected. If a Contractor is unable to locate sufficient plants in specified sizes, negotiation for unit price adjustment shall be concluded prior to planting. Tree types shall be Common Hackberry (Celtis occidentalis), Amur Maple (Acer ginnala), Skyline Honeylocust (Gleditsia triacanthos f. inermis 'Skycole'), and Prairie Expedition American Elm (Ulmus americana 'Lewis & Clark'). Shrub type shall be Common Purple Lilac (Syringa vulgaris).

970-W03 PLANT ACCEPTANCE: Plants which lack proper proportions, have serious injuries to the bark or roots, broken branches, objectionable disfigurement, shriveled and/or dry roots, broken bails, insect pests, diseases, or which are not found to comply with the specifications in any way will be rejected. Rejected plants shall be removed from the project site within 48 hours and shall become the property of the Contractor.

970-W04 PLANTING AREA SCORING: The sides and bottom of planting pits shall be scarified to remove any glazing affects caused by digging. The cost is included in the bid price of the trees.

970-W05 WATERING BAGS: Each tree shall require a permanent watering bag that is made of polyethylene reinforced with nylon webbing and treated with U.V. inhibitors, is watertight on all sides with ¼” heat seals, is secured to the tree with heavy duty nylon zippers, and has drip holes cored through both ply of material to allow for adjustable drip times. Contractor shall periodically fill the bags with water. Bags shall be removed by October 1st and reinstalled in the spring. Bag shall become property of the City. The cost is included in the bid price of the trees.

970-W06 PLANTING SOIL TYPE: The backfill shall be a suitable loam/clay mixture. When possible, use existing soil as backfill. In heavy clay soils, amendments may need to be added to improve soil mixture. Contractor to notify Project Engineer should this situation occur. Contractor to mix amendments prior to filling the hole to prevent stratification. The cost is included in the bid price of the trees.

970-W07 BACKFILL INSTALLATION: Each plant pit shall be backfilled with the approved planting soil placed in layers around the roots. Each layer shall be tamped carefully in a manner to avoid injury to the roots or disturbing the position of the plant. When approximately 2/3 to 3/4 of the planting pit has been backfilled, the hole shall be watered so as to settle the soil in and around all of the roots. After water has been absorbed, the planting pit shall be filled with the planting soil, tamped lightly to grade and watered thoroughly again. Any further settlement shall be brought to grade with additional planting soil. Contractor to ensure proper drainage and prevent any puddling of water around the plant trunks and stems. All plants shall be watered within 2 hours of installation. Costs to be included in the bid price of the trees.

970-W08 TREE STAKING: Trees shall be staked immediately upon being planted and the staking shall be considered and organized as part of the planting process. Stakes shall be snug after settling has taken place. The Contractor shall be responsible for the removal of the stakes after (2) years or as determined by the Project Engineer or City Forestry. Contact the Project Engineer in advance for approval. The cost is included in the bid price of the trees.

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970-W09 GUYING WIRE: The minimum size of wire used for guying shall be 12-gauge. Substitution requests for standard hose and wire guying will not be approved. Wire should be level from stake to tree tie. No part of any wire shall be in contact with any part of each tree. All excess wire shall be removed or wrapped in such a way as to eliminate any loose ends. The cost is included in the bid price of the trees.

970-W10 TREE TIES: Trees will be anchored to stakes by a 16” long polypropylene 1-1/2” strap. The cost is included in the bid price of the trees.

970-W11 MULCH: Mulch shall be shredded hardwood mulch. Chips shall not contain any twigs or foreign material. Mulch shall be required around every tree planted within 24 hours. It shall extend beyond the tree canopy or be 3-feet diameter, whichever is greater. Keep mulch 6” away from tree trunks and stems. The cost is included in the price of the trees.

970-W12 INITIAL ACCEPTANCE: Upon completion of installation of all plants, the Project Engineer and City Forester will make an inspection of all plants for acceptability. Any establishment procedures that have not been performed shall be brought to the Contractor's attention for immediate correction. Upon the completion of any procedure corrections, a letter of initial acceptance shall be provided by the Project Engineer establishing the warranty and maintenance timeline for the project.

970-W13 WARRANTY/MAINTENANCE WATERING: Contractor is responsible for notifying the Project Engineer prior to scheduled watering. A detailed inspection form including work performed and watering dates shall be submitted to the Project Engineer. The cost is included in the bid price of the trees.

970-W14 PLANT ESTABLISHMENT PROCEDURES: The establishment procedures through the extent of the contract shall include additional pruning, protective measures against pests and diseases (including rabbit and/or rodent protection), watering as often as required by necessity or directed by the Project Engineer, cultivating, replacing mulch, keeping the stakes firm and guys adjusted, weeding with a pre-emergent weed control or other pre-approved means, and other establishment procedures as deemed necessary by the Project Engineer including removal of any dead plants from the project. A detailed inspection form including work performed and work dates shall be submitted to the Project Engineer. The cost is included in the bid price of the trees or shrubs as applicable.

970-W15 REPLACING PLANT MATERIALS: Any plant that is 25% dead or more, as determined by Engineer or City Forester, shall be considered dead and must be replaced by the Contractor. Trees shall be considered dead when main leader has died back, or 25% of the crown is dead. Shrubs shall be considered dead when 25% of the branching is dead. Removal of designated plants shall occur immediately; replacement shall occur immediately or as soon as possible per acceptable planting dates and weather conditions. No additional compensation will be made.

970-W16 PLANTING/REPLANTING DATES: Allowable planting dates for initial installation and for replacement plants shall be as follows below. Weather conditions may allow for the planting of the plants to occur outside of these dates. One such possibility is the expansion of the fall planting window to begin September 1. Written approval from the Project Engineer will be required in all such instances.

Spring: April 15 - June 15

Fall: September 15 - October 15

970-W17 PROJECT INSPECTIONS: A minimum of two formal inspections shall occur each year of the warranty/maintenance period - one in the Spring and one in the Fall. The Contractor shall be notified of any unacceptable plants or site conditions which need to be corrected. It will be at the Project Engineer's discretion should any additional inspections be deemed necessary. The cost is included in the bid price of the trees.

970-W18 FINAL ACCEPTANCE: Upon completion of the warranty/maintenance period, the Project Engineer and City Forester will make an inspection of the plants for acceptability. The inspection will normally be made during the week that the warranty/maintenance period terminates - in this case 1 year from the time of final project acceptance by the City of West Fargo. All items of maintenance shall have been performed on the plants prior to inspection. Any items of maintenance that have not been performed may make a plant unacceptable. Any establishment procedures that have not been performed shall be brought to the Contractor's attention for immediate correction. Upon completion of any corrections, a letter of final acceptance shall be provided by the Project Engineer notifying the Contractor of the completion of the project.

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ENVIRONMENTAL COMMITMENTS

ENVIRONMENTAL COMMITMENTS: The City of West Fargo, City of Fargo, Cass County, North Dakota Department of Transportation, and the Federal Highway Administration have made environmental commitments to secure approval of this project. The environmental commitments are as follows:

EC-1: Unavoidable impacts to wetlands will be mitigated onsite or adjacent to the project.

ACTION TAKEN/REQUIRED: The wetland impacts for this project do not require mitigation, based on the impacts and criteria shown in the following tables.

Wetland Impact Table

Wetland Number	Location	Cowardin Class.	Wetland Type	Wetland Size (Acres)	Wetland Feature	USACE Jurisdictional Wetlands*	Wetland Impacts (acres)		WETLAND MITIGATION			
									Mitigation Req'd			
							Temp.	Perm.	EO 11990	USACE	Location; Acreage; Wetland#; Ratio	Onsite Mitigation Acres
1	Section 6, T139N, R49W	PEMAx	diversion channel	0.83	artificial	Y	0.00	0.00	NA	NA	NA	NA
1a	Section 6, T139N, R49W	R2UBH	diversion channel (Sheyenne Diversion)	0.16	artificial	Y	0.00	0.00	NA	NA	NA	NA
2	Section 31, T140N, R49W	PEMCx	drain	2.06	artificial	Y	0.00	0.00	NA	NA	NA	NA
3	Section 31, T140N, R49W	PEMCx	stormwater pond	0.22	artificial	Preamble **	0.00	0.00	NA	NA	NA	NA
4	Section 6, T139N, R49W	PEMAx	road ditch	0.13	artificial	Preamble **	0.00	0.00	NA	NA	NA	NA
5	Section 6, T139N, R49W	PEMAx	depression	0.03	artificial	Preamble **	0.00	0.00	NA	NA	NA	NA
6	Section 6, T139N, R49W	PEMAx	road ditch	0.07	artificial	Preamble **	0.00	0.00	NA	NA	NA	NA
7	Section 31, T140N, R49W	PEMAx	road ditch	0.18	artificial	Preamble **	0.04	0.03	NA	NA	NA	NA
8	Section 6, T139N, R49W	R2UBH	perennial stream	0.20	natural	Y	0.01	0.00	NA	NA	NA	NA
8a	Section 6, T139N, R49W	R2UBH	perennial stream (Sheyenne River)	0.06	natural	Y	0.00	0.00	NA	NA	NA	NA
9	Section 6, T139N, R49W	PEMAx	road ditch	1.38	artificial	Preamble **	0.01	0.29	NA	NA	NA	NA
10	Section 31, T140N, R49W	PEMAx	road ditch	0.01	artificial	Preamble **	0.00	0.01	NA	NA	NA	NA
11	Section 5, T139N, R49W	PEMAx	road ditch	0.03	artificial	Preamble **	0.00	0.00	NA	NA	NA	NA
12	Section 32, T140N, R49W	PEMAx	road ditch	0.17	artificial	Preamble **	0.01	0.15	NA	NA	NA	NA
13	Section 32, T140N, R49W	PEMAx	road ditch	0.21	artificial	Preamble **	0.01	0.19	NA	NA	NA	NA
14	Section 32, T140N, R49W	PEMAx	road ditch	0.01	artificial	Preamble **	0.00	0.01	NA	NA	NA	NA
15	Section 32, T140N, R49W	PEMAx	drain	0.09	artificial	Y	0.01	0.00	NA	NA	NA	NA
16	Section 32, T140N, R49W	PEMAx	road ditch	<0.01	artificial	Preamble **	0.00	0.01	NA	NA	NA	NA
17	Section 32, T140N, R49W	PEMAx	road ditch	0.03	artificial	Preamble **	0.00	0.03	NA	NA	NA	NA
18	Section 4, T139N, R49W	PEMAx	road ditch	0.07	artificial	Preamble **	0.00	0.00	NA	NA	NA	NA
19	Section 33, T140N, R49W	PEMAx	road ditch	0.02	artificial	Preamble **	0.00	0.02	NA	NA	NA	NA

ENVIRONMENTAL COMMITMENTS

Wetland Impact Table

Wetland Number	Location	Cowardin Class.	Wetland Type	Wetland Size (Acres)	Wetland Feature	USACE Jurisdictional Wetlands*	Wetland Impacts (acres)		WETLAND MITIGATION			
									Mitigation Req'd		Location; Acreage; Wetland#; Ratio	Onsite Mitigation Acres
							Temp.	Perm.	EO 11990	USACE		
20	Section 4, T139N, R49W	PEMAx	road ditch	0.02	artificial	Preamble **	0.00	0.02	NA	NA	NA	NA
21	Section 4, T139N, R49W	PEMAx	road ditch	0.08	artificial	Preamble **	0.00	0.08	NA	NA	NA	NA
22	Section 33, T140N, R49W	PEMAx	road ditch	0.76	artificial	Preamble **	0.01	0.73	NA	NA	NA	NA
23	Section 4, T139N, R49W	PEMAx	road ditch	0.42	artificial	Preamble **	0.00	0.42	NA	NA	NA	NA
			Totals	**7.23**			**0.10**	**1.99**				**0.00**

POTENTIAL OTHER WATERS

Number	Location	Long/Lat (Dec. Deg.)	Type	Size		Feature	USACE Jurisdictional*	Impacts to Potential Other Waters		
				Acres	Linear Feet			Acres Temp	Acres Perm	Linear Feet
POW 1	Section 3, T139N, R49W	-96.861357 W 46.890657 N	Drain	0.12	222	Artificial - concrete structure	Y	0.00	0.00	0
			Totals	**0.12**	**222**			**0.00**	**0.00**	**0**

* A wetland Jurisdictional Determination was issued by the USACE on 08/06/2013; NWO-2013-1359-BIS.
** Non-waters of the US (Preamble Waters) – The USACE has identified preamble waters; therefore, a Jurisdictional Determination was not prepared for these waters. The discharge of dredged or fill material into these areas (preamble waters) will not require authorization from the USACE. However, mitigation may still be required under EO 11990 pursuant to the Design Manual.

Summary Impact Table

Total Permanent Impact Summary		Temporary Impacts and additional information	
Wetland Type	Total (Acres)	Wetland Type	Total (Acres/Lf)
Natural/JD	0.00	Temporary JD	0.02
Natural/Non-JD	0.00	Non-JD Temporary	0.08
Artificial/JD	0.00	Permanent JD > 0.10	0.00
Artificial /Non-JD	1.99	Permanent OW	0.00
Total	1.99	Temporary OW	0.00

Compensation Requirements by Agency and Water Type

Water Type	USACE Mitigation	EO 11990 Mitigation
Natural/JD Wetland	> 0.1 acre	All
Natural/Non-JD Wetland	No mitigation required	All
Artificial/JD Wetland	> 0.1 acre	No mitigation required
Artificial/Non-JD Wetland	No mitigation required	No mitigation required
Deep Water (> than 6.6 feet)	No mitigation required	No mitigation required
Other Water	> 300 linear feet	No mitigation required
Preamble	No mitigation required	No mitigation required

EC-2: No construction or demolition activities shall take place during the spawning season in the Sheyenne River, a Class I fishery, from April 15 to June 1.

ESTIMATE OF QUANTITIES

SPEC	CODE	ITEM DESCRIPTION	UNIT	SU-8-992(036)037	DRAINAGE	LPA FUNDED	TOTAL
103	0100	CONTRACT BOND	L SUM	1	-	-	1
107	0100	RAILWAY PROTECTION INSURANCE	L SUM	1	-	-	1
201	0330	CLEARING & GRUBBING	L SUM	1	-	-	1
202	0112	REMOVAL OF CONCRETE	SY	14	-	509	523
202	0130	REMOVAL OF CURB & GUTTER	LF	342	-	24	366
202	0165	REMOVE & SALVAGE BASE & SURFACING	TON	38,332	-	-	38,332
202	0170	REMOVAL OF CULVERTS-ALL TYPES & SIZES	LF	2,158	-	-	2,158
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES	LF	1,546	-	101	1,647
202	0210	REMOVAL OF MANHOLES	EA	3	-	1	4
202	0235	REMOVAL OF CATCH BASIN	EA	1	-	-	1
202	0312	REMOVE EXISTING FENCE	LF	-	-	269	269
203	0101	COMMON EXCAVATION-TYPE A	CY	41,576	-	-	41,576
203	0109	TOPSOIL	CY	49,087	-	-	49,087
203	0121	TOPSOIL-WETLAND	CY	1,625	-	-	1,625
203	0138	COMMON EXCAVATION-SUBCUT	CY	19,909	-	-	19,909
203	0140	BORROW-EXCAVATION	CY	88,127	-	-	88,127
216	0100	WATER	M GAL	3,998	-	-	3,998
251	0100	SEEDING CLASS I	ACRE	7.1	-	-	7.1
251	0200	SEEDING CLASS II	ACRE	32.5	-	-	32.5
253	0101	STRAW MULCH	ACRE	32.4	-	-	32.4
253	0201	HYDRAULIC MULCH	ACRE	7.1	-	-	7.1
255	0103	ECB TYPE 3	SY	868	-	-	868
256	0100	RIPRAP GRADE I	CY	66.8	-	-	66.8
260	0200	SILT FENCE SUPPORTED	LF	2,685	-	-	2,685
260	0201	REMOVE SILT FENCE SUPPORTED	LF	2,685	-	-	2,685
261	0112	FIBER ROLLS 12IN	LF	37,570	-	-	37,570
261	0113	REMOVE FIBER ROLLS 12IN	LF	17,505	-	-	17,505
262	0100	FLOTATION SILT CURTAIN	LF	45	-	-	45
262	0101	REMOVE FLOTATION SILT CURTAIN	LF	45	-	-	45
302	0050	TRAFFIC SERVICE AGGREGATE	TON	1,500	-	-	1,500
302	0100	SALVAGED BASE COURSE	TON	59,653	-	-	59,653
411	0105	MILLING PAVEMENT SURFACE	SY	243	-	-	243
430	0500	COMMERCIAL GRADE HOT MIX ASPHALT	TON	427	-	-	427
430	2000	PATCHING	TON	-	-	225	225
550	0312	10.5IN NON REINF CONCRETE PVMT CL AE-DOWELED	SY	72,990	-	-	72,990
702	0100	MOBILIZATION	L SUM	1	-	-	1
704	0100	FLAGGING	MHR	500	-	-	500
704	1000	TRAFFIC CONTROL SIGNS	UNIT	4,266	-	-	4,266
704	1051	TYPE II BARRICADE	EA	2	-	-	2
704	1052	TYPE III BARRICADE	EA	55	-	-	55
704	1060	DELINEATOR DRUMS	EA	200	-	-	200
704	1072	FLEXIBLE DELINEATORS	EA	42	-	-	42
706	0500	AGGREGATE LABORATORY	EA	1	-	-	1
708	1531	INLET PROTECTION-FIBER ROLL 12IN	EA	73	-	-	73
708	1533	REMOVAL INLET PROTECTION-FIBER ROLL 12IN	EA	48	-	-	48

ESTIMATE OF QUANTITIES

SPEC	CODE	ITEM DESCRIPTION	UNIT	SU-8-992(036)037	DRAINAGE	LPA FUNDED	TOTAL
708	1540	INLET PROTECTION-SPECIAL	EA	165	-	-	165
708	1541	REMOVE INLET PROTECTION-SPECIAL	EA	39	-	-	39
709	0151	GEOSYNTHETIC MATERIAL TYPE R1	SY	88,231	-	-	88,231
710	0250	TEMPORARY BYPASS DRAINAGE SYSTEM	EA	1	-	-	1
714	0115	PIPE CONC REINF 12IN CL III-STORM DRAIN	LF	265	-	-	265
714	0210	PIPE CONC REINF 15IN CL III-STORM DRAIN	LF	3,992	1,582	-	5,574
714	0315	PIPE CONC REINF 18IN CL III-STORM DRAIN	LF	874	828	-	1,702
714	0405	PIPE CONC REINF 21IN CL III-STORM DRAIN	LF	179	1,692	-	1,871
714	0620	PIPE CONC REINF 24IN CL III-STORM DRAIN	LF	240	1,642	-	1,882
714	0710	PIPE CONC REINF 27IN CL III-STORM DRAIN	LF	55	1,742	-	1,797
714	0825	PIPE CONC REINF 30IN CL III-STORM DRAIN	LF	126	804	-	930
714	0910	PIPE CONC REINF 36IN CL III-STORM DRAIN	LF	-	1,098	-	1,098
714	1010	PIPE CONC REINF 42IN CL III-STORM DRAIN	LF	-	394	-	394
714	1110	PIPE CONC REINF 48IN CL III-STORM DRAIN	LF	-	780	-	780
714	1212	PIPE CONC REINF 54IN CL III-STORM DRAIN	LF	-	928	-	928
714	1312	PIPE CONC REINF 60IN CL III-STORM DRAIN	LF	-	512	-	512
714	1412	PIPE CONC REINF 66IN CL III STORM DRAIN	LF	-	281	-	281
714	1512	PIPE CONC REINF 72IN CL III STORM DRAIN	LF	-	449	-	449
714	3000	END SECT-CONC REINF 12IN	EA	3	-	-	3
714	3005	END SECT-CONC REINF 15IN	EA	17	-	-	17
714	3010	END SECT-CONC REINF 18IN	EA	1	-	-	1
714	3015	END SECT-CONC REINF 21IN	EA	1	-	-	1
714	3020	END SECT-CONC REINF 24IN	EA	3	-	-	3
714	4108	PIPE CONDUIT 27IN	LF	-	187	-	187
714	4163	PIPE CONDUIT 27IN-JACKED OR BORED	LF	-	100	-	100
714	5805	END SECT CORR STEEL .064IN 15IN	EA	1	-	-	1
714	5825	END SECT CORR STEEL .079IN 30IN	EA	1	-	-	1
714	5845	END SECT CORR STEEL .109IN 54IN	EA	1	-	-	1
714	5855	END SECT CORR STEEL .109IN 72IN	EA	1	-	-	1
714	7040	SANITARY SEWER SERVICE CONNECTION	EA	-	-	14	14
714	8050	PIPE STEEL SMOOTH WALL .719IN 54IN BORED	LF	-	135	-	135
714	8500	CASING PIPE 20IN	LF	-	-	153	153
714	8516	CASING PIPE 36IN	LF	-	-	100	100
714	9680	PLUG PIPE-ALL TYPES & SIZES	EA	1	-	-	1
714	9696	EDGEDRAIN NON PERMEABLE BASE	LF	26,753	-	-	26,753
722	0100	MANHOLE 48IN	EA	60	-	-	60
722	0110	MANHOLE 60IN	EA	23	-	-	23
722	0120	MANHOLE 72IN	EA	5	-	-	5
722	0130	MANHOLE 84IN	EA	5	-	-	5
722	0140	MANHOLE 96IN	EA	8	-	-	8
722	0220	MULTI MANHOLE	EA	5	-	-	5
722	0300	MANHOLE SANITARY	EA	-	-	27	27
722	2490	MANHOLE STORM CONNECTION	EA	9	-	-	9
722	2500	MANHOLE SPECIAL	EA	-	-	2	2
722	3291	ABANDON SANITARY SEWER MANHOLE	EA	-	-	12	12

ESTIMATE OF QUANTITIES

SPEC	CODE	ITEM DESCRIPTION	UNIT	SU-8-992(036)037	DRAINAGE	LPA FUNDED	TOTAL
722	3295	ABANDON STORM SEWER MANHOLE	EA	9	-	-	9
722	3297	ABANDON STORM SEWER	LF	12,143	-	1,868	14,011
722	3499	INLET	EA	41	-	-	41
722	3510	INLET-TYPE 2	EA	30	-	-	30
722	3520	INLET-TYPE 2 DOUBLE	EA	14	-	-	14
722	6140	ADJUST GATE VALVE BOX	EA	27	-	-	27
722	6200	ADJUST MANHOLE	EA	4	-	-	4
722	6240	ADJUST UTILITY APPURTENANCE	EA	1	-	-	1
724	0210	FITTINGS-DUCTILE IRON	LBS	-	-	4,180	4,180
724	0270	REMOVE GATE VALVE & BOX	EA	-	-	3	3
724	0300	GATE VALVE & BOX 6IN	EA	-	-	3	3
724	0314	GATE VALVE & BOX 12IN	EA	-	-	4	4
724	0410	HYDRANT-INSTALL 5IN	EA	-	-	4	4
724	0427	ADJUST HYDRANT	EA	15	-	-	15
724	0430	REMOVE HYDRANT	EA	-	-	1	1
724	0530	TAPPING SLEEVE & VALVE 12IN X 6IN	EA	-	-	2	2
724	0540	TAPPING SLEEVE & VALVE 12IN X 8IN	EA	-	-	1	1
724	0719	WATER LINE 1 1/2IN PVC	LF	-	-	90	90
724	0810	WATERMAIN 6IN PVC	LF	-	-	174	174
724	0830	WATERMAIN 8IN PVC	LF	-	-	111	111
724	0850	WATERMAIN 12IN PVC	LF	-	-	1,829	1,829
724	0852	WATERMAIN 16IN PVC	LF	-	-	40	40
724	0944	CONNECTION TO EXISTING MAIN	EA	-	-	21	21
724	1095	BORE SANITARY SEWER PIPE	LF	-	-	593	593
724	1100	SANITARY SEWER 4IN	LF	-	-	82	82
724	1110	8IN SANITARY SEWER PIPE	LF	-	-	642	642
724	1115	10IN SANITARY SEWER PIPE	LF	-	-	432	432
724	1117	12IN SANITARY SEWER PIPE	LF	-	-	2,598	2,598
724	1118	15IN SANITARY SEWER PIPE	LF	-	-	1,385	1,385
724	1120	6IN SEWER SERVICE PIPE	LF	-	-	700	700
724	1121	18IN SANITARY SEWER PIPE	LF	-	-	1,562	1,562
724	1125	24IN SANITARY SEWER PIPE	LF	-	-	3,575	3,575
724	6005	CORPORATION COCK & SWIVEL BEND 1IN	EA	-	-	1	1
724	6013	ABANDON VALVE BOX	EA	-	-	10	10
724	7018	1IN CURB STOP & BOX-NEW SERVICE	EA	-	-	1	1
724	7020	1IN CU-TYPE K	LF	-	-	112	112
748	0120	CURB & GUTTER MOUNTABLE-TYPE I	LF	434	-	-	434
748	0140	CURB & GUTTER-TYPE I	LF	2,723	-	-	2,723
748	0190	CURB & GUTTER-TYPE I 30IN	LF	26,753	-	24	26,777
750	0030	PIGMENTED IMPRINTED CONCRETE	SY	1,483	-	-	1,483
750	0100	SIDEWALK CONCRETE	SY	9,315	-	-	9,315
750	0115	SIDEWALK CONCRETE 4IN	SY	4,459	-	-	4,459
750	0210	CONCRETE MEDIAN NOSE PAVING	SY	58.5	-	-	58.5
750	1020	DRIVEWAY CONCRETE 8IN	SY	1,254	-	-	1,254

ESTIMATE OF QUANTITIES

SPEC	CODE	ITEM DESCRIPTION	UNIT	SU-8-992(036)037	DRAINAGE	LPA FUNDED	TOTAL
750	2115	DETECTABLE WARNING PANELS	SF	598	-	-	598
752	0600	FENCE CHAIN LINK	LF	37	-	-	37
752	0911	TEMPORARY SAFETY FENCE	LF	4,019	-	1,000	5,019
752	0922	FENCE REMOVE & RESET	LF	2,435	-	-	2,435
752	2100	VEHICLE GATE	EA	1	-	-	1
754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	824.7	-	-	824.7
754	0112	FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	SF	121.7	-	-	121.7
754	0141	BARRICADE ASSEMBLY A	EA	6	-	-	6
754	0206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF	1,696	-	-	1,696
754	0592	RESET SIGN PANEL	EA	7	-	-	7
754	0805	OBJECT MARKERS - CULVERTS	EA	25	-	-	25
754	9003	SALVAGE SIGN-TYPE D	EA	-	-	4	4
762	0112	EPOXY PVMT MK MESSAGE	SF	445	-	-	445
762	0430	SHORT TERM 4IN LINE-TYPE NR	LF	3,240	-	-	3,240
762	1280	PREFORMED THERMO PLASTIC PVMT MK MESSAGE	SF	1,524	-	-	1,524
762	1305	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	LF	31,104	-	-	31,104
762	1309	PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED	LF	3,817	-	-	3,817
762	1317	PREFORMED PATTERNED PVMT MK 16IN LINE-GROOVED	LF	142	-	-	142
762	1325	PREFORMED PATTERNED PVMT MK 24IN LINE-GROOVED	LF	326	-	-	326
766	0100	MAILBOX-ALL TYPES	EA	1	-	-	1
770	0001	LIGHTING SYSTEM	EA	1	-	-	1
772	0003	SIGNAL STANDARD FOUNDATION	EA	1	-	-	1
772	0100	PULL BOX	EA	2	-	-	2
772	0240	2IN DIAMETER RIGID CONDUIT	LF	258	-	-	258
772	0325	DETECTOR LOOP-POLYETHYLENE CONDUIT PRE-WIRED	LF	836	-	-	836
772	0330	LOOP LEAD-IN CONDUCTOR	LF	1,762	-	-	1,762
772	0400	NO12 AWG 2 CONDUCTOR CABLE	LF	335	-	-	335
772	0401	NO12 AWG 3 CONDUCTOR CABLE	LF	15	-	-	15
772	0405	NO12 AWG 7 CONDUCTOR CABLE	LF	335	-	-	335
772	0490	SAW SLOT	LF	346	-	-	346
772	0695	TYPE V SIGNAL STANDARD	EA	1	-	-	1
772	9205	IT-PULL BOX	EA	10	-	-	10
772	9210	IT-2-2IN CONDUITS-TRENCHED	LF	5,387	-	-	5,387
910	0010	VIDEO INSPECTION - UNDERGROUND PIPE	EA	-	-	1	1
910	0480	TRASH RACK	EA	7	-	-	7
910	0570	MODIFY MANHOLE	EA	1	-	8	9
920	0099	PUMPING EQUIPMENT	EA	-	-	1	1
970	2011	AMUR MAPLE	EA	4	-	-	4
970	2050	COMMON HACKBERRY	EA	5	-	-	5
970	2155	SKYLINE HONEYLOCUST	EA	4	-	-	4
970	2456	PRAIRIE EXPEDITION AMERICAN ELM	EA	1	-	-	1
970	5295	COMMON PURPLE LILAC	EA	35	-	-	35
990	0400	PIPE CLEANOUT	EA	-	-	8	8
990	0450	ABANDON WELL	EA	-	-	8	8

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BASIS OF ESTIMATE

Material Unit Weights
Existing and Proposed Concrete @ 2.0 TON / CY
Existing Bituminous Surfacing @ 1.875 TON / CY
Existing Aggregate Base @ 1.875 TON / CY
Salvaged Base Course @ 1.875 TON / CY
Traffic Service Aggregate @ 1.875 TON / CY
Commercial Grade Hot Mix Asphalt @ 1.875 TON/CY

Topsoil
Topsoil removal and placement is based on 6" depth.

Water
10 GAL / CY of Embankment Material
40 GAL / TON of Salvaged Base Course
75 MGAL for Dust Palliative

Seeding & Mulching
Areas outside of the paved roadways, sidewalks, and driveways disturbed by construction shall be seeded and mulched. The limits of disturbance include the roadway right of way, temporary construction easements, and permanent easements.

Areas of proposed riprap are not included in the seeding or mulching quantities. Areas of proposed "ECB Type 3" are included in the seeding quantities and excluded from the mulching quantities.

Mailboxes

766 0100 MAILBOX-ALL TYPES		
Station	**Offset**	**Type**
100+90	LT	Double
	Total:	**1 EA**

Object Markers - Culverts

754 0805 OBJECT MARKERS - CULVERTS			
Stucture No.	**Station**	**Offset**	**Quantity (EA)**
ST-4.4	78+25	RT	1
ST-7.3	85+00	RT	1
ST-9.2	92+00	RT	1
ST-19.3	107+46	RT	1
ST-25.4	118+75	RT	1
ST-30.3	127+63	RT	1
ST-31.3	130+25	LT	1
ST-31.5	128+81	RT	1
ST-32.2	131+18	RT	1
ST-34.1	135+01	RT	1
ST-35.1	137+40	RT	1
ST-40.4	5+41*	RT	1
ST-40.8	0+98*	RT	1
ST-42.1	156+32	RT	1
ST-43.1	159+65	RT	1
ST-45.1	163+40	RT	1
ST-50.2	171+06	RT	1
ST-51.1	174+36	LT	1
ST-51.2	174+36	RT	1
ST-80.2	176+56	LT	1
ST-80.4	177+25	LT	1
ST-81.2	179+33	LT	1
ST-82.3	182+90	LT	1
ST-89.2	201+77	LT	1
ST-89.3	202+10	RT	1
		Total:	**25 EA**

* Stationing along the alignment as shown on Section 55, Sheet 26
Note: Refer to Standard Drawing D-754-83

Additional Quantities

Spec	Code	Description	Qty.*	Unit
260	0200	SILT FENCE SUPPORTED	500	LF
260	0201	REMOVE SILT FENCE SUPPORTED	500	LF
261	0112	FIBER ROLLS 12IN	2000	LF
261	0113	REMOVE FIBER ROLLS 12IN	2000	LF
302	0050	TRAFFIC SERVICE AGGREGATE	1500	TON
430	0500	COMMERCIAL GRADE HOT MIX ASPHALT (DRIVEWAY / INTERSECTION TRANSITIONS)	200	TON
752	0911	TEMPORARY SAFETY FENCE	500	LF

*These quantities are provided to be used on the project as needed or directed

This document was originally issued and sealed by Matthew T. Kinsella Registration Number PE- 5692, on 07/23/2015 and the original document is stored at the City of West Fargo

Apex Engineering Group	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-992(036)037	11	1

SALVAGED BASE COURSE SUMMARY - 12TH AVENUE NORTH

LOCATION	202 0165 REMOVE & SALVAGE BASE & SURFACING (TON) PAY ITEM						302 0100 SALVAGED BASE COURSE REQUIRED (TON) PAY ITEM
	REMOVAL OF AGGREGATE		REMOVAL OF HBP & CONCRETE		TOTAL		
	(SF)	A (TON)	(SF)	B (TON)	(SF)	C=A+B (TON)	(TON)
12TH AVENUE NORTH - CR 19 TO 9TH STREET ROUNDABOUT							
Sta 63+50 to Sta 70+50	0	0	0	0	0	0	0
Sta 73+00 to Sta 77+50	0	0	14,889	1,166	14,889	1,166	1,598
Sta 77+50 to Sta 84+50	723	25	25,792	1,900	26,515	1,925	2,639
Sta 84+50 to Sta 91+50	0	0	26,877	2,023	26,877	2,023	2,511
Sta 91+50 to Sta 98+50	0	0	41,074	2,799	41,074	2,799	3,751
Sta 98+50 to Sta 105+50	2,672	93	20,359	1,421	23,031	1,514	3,075
Sta 105+50 to Sta 112+50	1,752	61	24,841	1,574	26,593	1,635	3,063
Sta 112+50 to Sta 119+50	3,089	107	15,942	1,199	19,031	1,306	2,504
Sta 119+50 to Sta 126+50	2,561	89	15,944	1,200	18,504	1,289	3,268
Sta 126+50 to Sta 133+50	2,387	83	15,763	1,186	18,150	1,269	3,307
Sta 133+50 to Sta 140+50	0	0	19,207	1,349	19,207	1,349	2,749
Sta 140+50 to Sta 146+73	0	0	26,068	1,550	26,068	1,550	2,939
12TH AVENUE NORTH - 9TH STREET ROUNDABOUT							
Sta 146+73 to Sta 147+50	0	0	1,892	143	1,892	143	265
Sta 147+50 to Sta 153+75	9,410	327	14,778	1,060	24,187	1,387	5,135
12TH AVENUE NORTH - 9TH STREET ROUNDABOUT TO LEVEE							
Sta 153+75 to Sta 154+50	1,919	66	1,770	123	3,689	189	259
Sta 154+50 to Sta 161+50	18,252	634	16,648	1,157	34,900	1,791	2,432
Sta 161+50 to Sta 168+50	18,130	629	16,596	1,152	34,726	1,781	2,569
Sta 168+50 to Sta 175+50	17,382	604	16,305	1,132	33,687	1,736	2,428
Sta 175+50 to Sta 176+52	2,485	86	2,404	166	4,889	252	369
12TH AVENUE NORTH - LEVEE TO 45TH ST							
Sta 176+52 to Sta 182+50	15,017	521	14,195	986	29,212	1,507	2,064
Sta 182+50 to Sta 189+50	21,174	735	20,222	1,305	41,396	2,040	2,583
Sta 189+50 to Sta 196+50	21,563	749	20,461	1,322	42,024	2,071	2,566
Sta 196+50 to Sta 203+50	32,708	1,136	29,167	1,940	61,875	3,076	2,365
9TH STREET NORTH							INCLUDED IN 12TH AVE N - STA 147+50 TO Sta 153+75
Sta 447+32 to Sta 454+87 (9th St Alignment)	28,575	993	27,716	1,182	56,290	2,175	
CASS COUNTY ROAD 17							
Sta 1+06 to Sta 7+00 (CR 17 Alignment)	17,466	607	15,388	792	32,854	1,399	2,840
Sta 7+00 to Sta 11+00 (CR 17 Alignment)	13,506	469	11,840	491	25,346	960	1,907
PROJECT-WIDE							
Winter Suspension Transitions	0	0	0	0	0	0	217
Approach & Driveway Tie-in Locations	INCLUDED in 12TH AVENUE NORTH REMOVALS						250
TOTAL		**8,014**		**30,318**		**38,332**	**59,653**
95% TOTAL		7,613		28,802		36,415	

Notes:

1. This is not a balance sheet. The contractor shall calculate their own balance of materials.
2. It is assumed 95% of "Remove & Salvage Base & Surfacing" quantities can be reclaimed after the crushing process.
3. The basis for "Remove & Salvage Base & Surfacing" and "Salvaged Base Course" is 1.875 Ton/CY for Aggregate and HBP and 2.0 Ton/CY for Concrete
4. Incorporate the milled material from the winter suspension transitions into the salvaged base course.

This document was originally issued and sealed by Brent Muscha Registration Number PE–7123 on 07/23/2015 and the original document is stored at the City of West Fargo.

12TH AVENUE NORTH RECONSTRUCTION

DATA TABLES

SALVAGED BASE COURSE SUMMARY

7/23/2015 8:14:55 AM Mike Johnson T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\011\011DT_001_SALVAGED_BASE_SUMMARY.dwg

EARTHWORK SUMMARY - 12TH AVENUE NORTH

LOCATION	COMMON EXCAVATION - TYPE A (CY) PAY ITEM	COMMON EXCAVATION - SUBCUT (CY) PAY ITEM	EMBANKMENT (CY)	BORROW-EXCAVATION PAY ITEM (CY)
	A	B	C	D = C - (A+B)
12TH AVENUE NORTH - WEST OF 9TH STREET ROUNDABOUT				
Sta 73+00.00 to 146+72.79	22,555	--	52,788	30,233
12TH AVE NORTH - 9TH STREET ROUNDABOUT				
Sta 146+72.79 to 153+75.02	3,050	--	10,048	6,998
12TH AVE NORTH - EAST OF 9TH STREET ROUNDABOUT				
Sta 153+75.02 to 202+12.42	14,251	--	60,803	46,552
Sta 153+00.00 to 174+00.00	--	11,514	14,968	3,454
Sta 177+50.00 to 192+00.00	--	8,395	10,914	2,519
COUNTY ROAD 17				
Sta 1+06.44 to 11+00.00	1,720	--	91	(1,629)
TOTAL	**41,576**	**19,909**	**149,612**	**88,127**

Notes:

1. This computation report is not a balance sheet. The Contractor shall calculate its own balance of materials.
2. An additional volume of 30% to allow for shrinkage is included in all embankment volumes.

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12TH AVENUE NORTH RECONSTRUCTION

DATA TABLES

EARTHWORK SUMMARY

7/21/2015 7:52:12 AM Mike Johnson T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\011\011DT_002_EARTHWORK_SUMMARY.dwg

TOPSOIL SUMMARY - 12TH AVENUE NORTH

LOCATION	TOPSOIL REMOVED		TOPSOIL REQUIRED	BALANCE
	203 0109 TOPSOIL (CY) BID ITEM	203 0121 TOPSOIL-WETLAND (CY) BID ITEM	TOPSOIL (CY)	EXCESS TOPSOIL TO BE SPREAD EVENLY (CY)
	A		B	C = A - B
12TH AVENUE NORTH - CR 19 TO 9TH STREET ROUNDABOUT				
Sta 73+00 to Sta 146+73	23,068		17,498	5,570
Wetlands		609		
12TH AVE NORTH - 9TH STREET ROUNDABOUT				
Sta 146+73 to Sta 153+75	4,610		3,832	778
Wetlands		29		
12TH AVE NORTH - 9TH STREET ROUNDABOUT TO LEVEE				
Sta 153+75 to Sta 176+52	10,847		9,314	1,533
Wetlands		226		
12TH AVE NORTH - LEVEE TO 45TH ST				
Sta 176+52 to Sta 202+12	10,051		9,759	292
Wetlands		761		
COUNTY ROAD 17				
Sta 1+06 to Sta 11+00	511		542	(31)
Wetlands		0		
TOTAL	**49,087**	**1,625**	**40,945**	**8,142**

Notes:

1. TOPSOIL quantities are based on a 6" removal and placement depth within the grading limits.
2. TOPSOIL-WETLAND quantity based on a 6" removal depth over the permanent impact areas within the grading limits.

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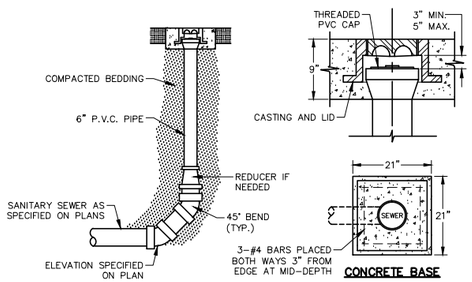
12TH AVENUE NORTH RECONSTRUCTION

DATA TABLES

TOPSOIL SUMMARY

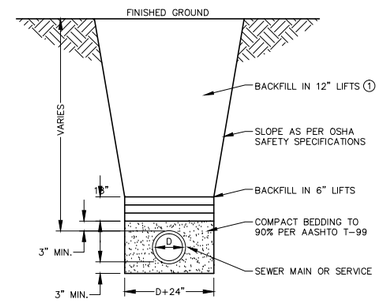
7/21/2015 7:53:17 AM Mike Johnson T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\011\011DT_003_TOPSOIL_SUMMARY.dwg

moore engineering, inc.	STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
	N.D.	SU-8-992(036)037	20057	**20**	1



SANITARY SEWER CLEANOUT

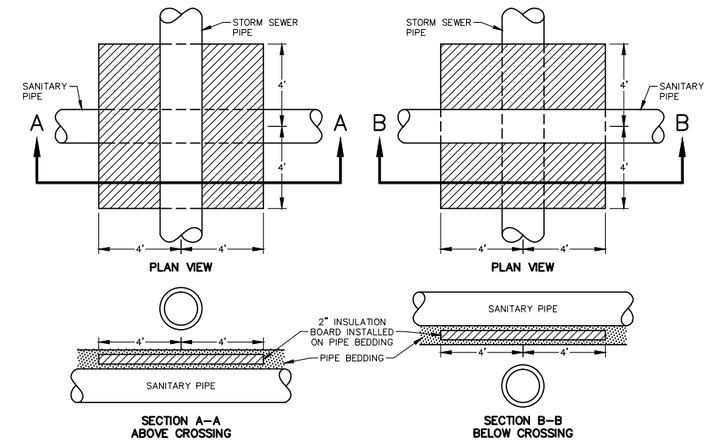
CITY OF WEST FARGO (STA 68+00 TO 175+32)



① COMPACT TO 95% MINIMUM STANDARD PROCTOR DENSITY.

SANITARY SEWER MAIN OR SERVICE TRENCH

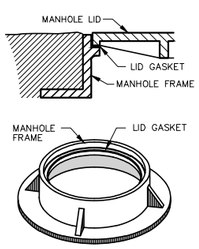
CITY OF WEST FARGO (STA 68+00 TO 175+32)



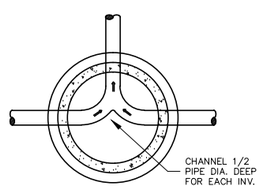
NOTES:
1. THIS DETAIL APPLIES TO BOTH MAINS & SERVICES WHERE CROSSING IS WITHIN 24".
2. IF AMOUNT OF CLEAR DISTANCE BETWEEN PIPES IS LESS THAN 1.0', 2 LAYERS OF 2" POLYSTYRENE INSULATION BOARD SHALL BE USED.
3. SERVICES MAY BE INSULATED WITH AN APPROVED ENCASEMENT INSULATION IN LIEU OF DETAIL.

SANITARY INSULATION FOR STORM CROSSING

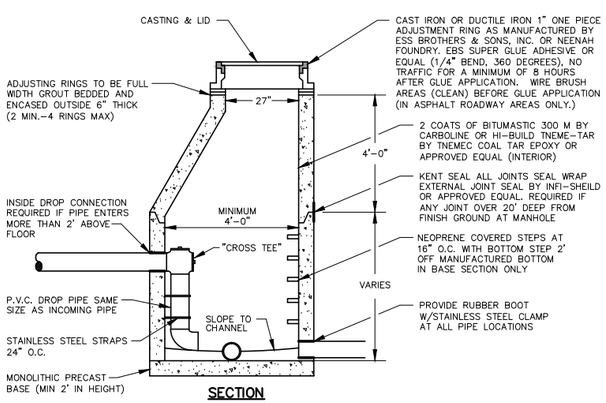
CITY OF WEST FARGO (STA 68+00 TO 175+32)



MANHOLE LID GASKET DETAIL



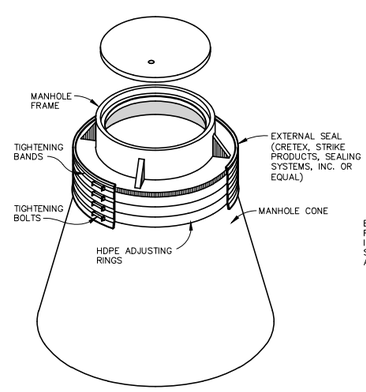
TOP VIEW



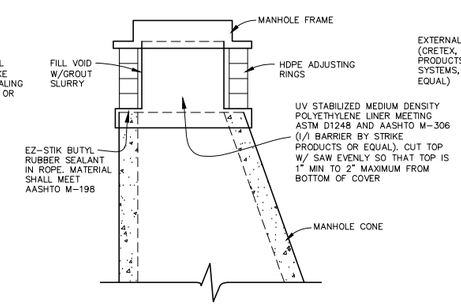
NOTES:
1. MANHOLES SHALL ALSO BE MARKED WITH 2" x 2" WOOD MARKERS WITH TOP 1' SPRAY PAINTED GREEN

SANITARY SEWER MANHOLE & MANHOLE - SPECIAL

CITY OF WEST FARGO (STA 68+00 TO 175+32)



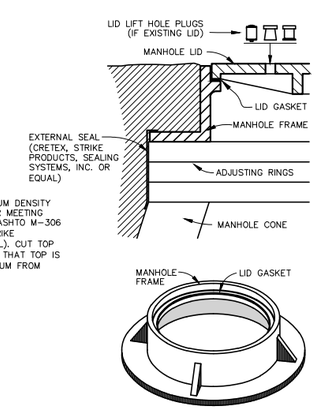
EXTERNAL MANHOLE SEAL (OPTION 1)



EXTERNAL MANHOLE SEAL (OPTION 2)

MANHOLE SEALS DETAIL

CITY OF WEST FARGO (STA 68+00 TO 175+32)



MANHOLE LID GASKET DETAIL
(PROVIDED BY UNDERGROUND CONTRACTOR)

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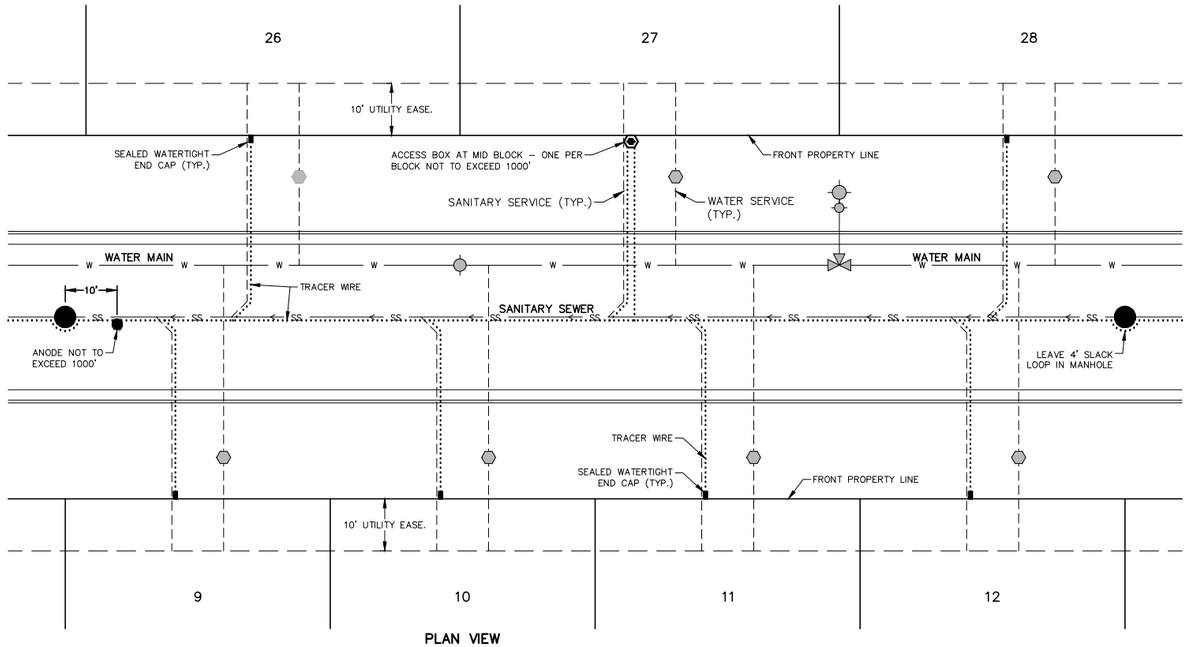
12TH AVENUE NORTH RECONSTRUCTION

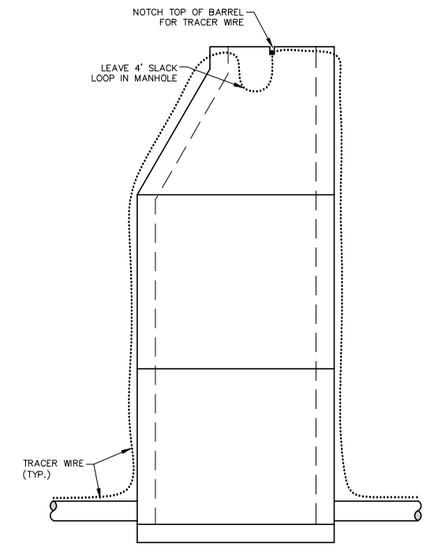
DETAILS

WEST FARGO SANITARY SEWER

moore engineering, inc.	STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
	N.D.	SU-8-992(036)037	20057	**20**	2



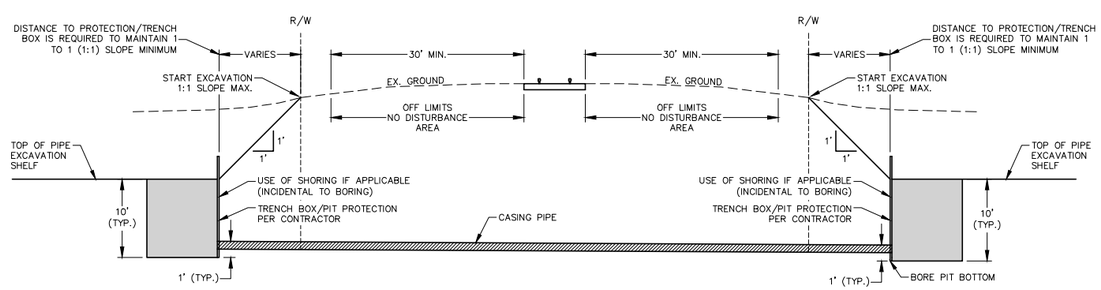
PLAN VIEW



SANITARY SEWER MANHOLE SECTION

SANITARY SEWER TRACER WIRE

CITY OF WEST FARGO (STA 68+00 TO 175+32)



RAILROAD BORE & CASING LIMITS

CITY OF WEST FARGO (STA 68+00 TO 175+32)

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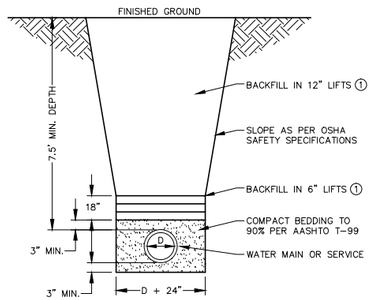
12TH AVENUE NORTH RECONSTRUCTION

DETAILS

WEST FARGO SANITARY SEWER

moore engineering, inc.

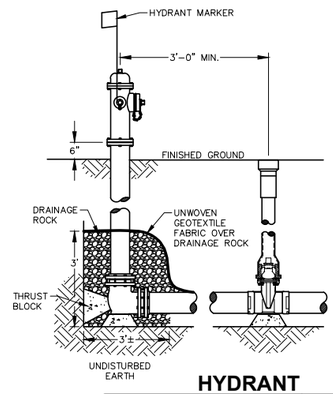
STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
N.D.	SU-8-992(036)037	20057	**20**	3



① COMPACT TO 95% MINIMUM STANDARD PROCTOR DENSITY.

WATER MAIN OR SERVICE TRENCH

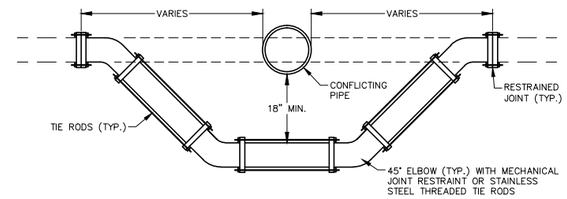
CITY OF WEST FARGO (STA 68+00 TO 175+32)



NOTES:
1. DO NOT BLOCK WEEP HOLE ON HYDRANT.
2. DO NOT COVER ANY JOINT WITH CONCRETE.
3. ALL UNDERGROUND METAL ITEMS TO BE WRAPPED WITH 8" MIL POLYETHYLENE PLASTIC.
4. NOZZLE HEIGHT SHALL BE MINIMUM 24" FROM FINISHED GROUND OR AS SHOWN ON PLANS.
5. DRAINAGE ROCK SHALL BE 2" MINUS WASHED ROCK. ROCK IS INCIDENTAL TO HYDRANT.

HYDRANT

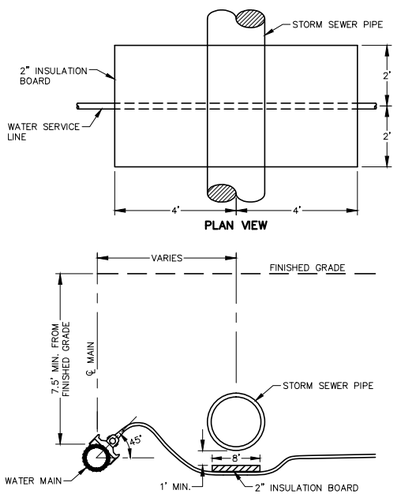
CITY OF WEST FARGO (STA 68+00 TO 175+32)



NOTES:
1. ALL LOWERING AREA SHALL BE COVERED WITH 8 MIL POLYETHYLENE PLASTIC.
2. THRUST BLOCKS NEED TO BE INSTALLED AT ELBOWS.
3. INSULATE IF CLOSER THAN 24" TO CONFLICTING STORM PIPE OR CLOSER THAN 7.5' FROM FINISHED GROUND.
4. ADJUST AS SHOWN ON PLANS, OTHERWISE WATER MAIN MAY BE BELOW OR ABOVE CONFLICTING PIPE.

WATER MAIN ADJUSTMENT

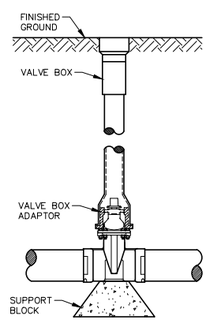
CITY OF WEST FARGO (STA 68+00 TO 175+32)



NOTES:
1. SEE WATER SERVICE DETAIL FOR INFORMATION NOT SHOWN.
2. WATER SERVICE MAY BE INSTALLED WITH ENCASEMENT INSULATION IN LIEU OF DETAIL.

WATER SERVICE LOWERING

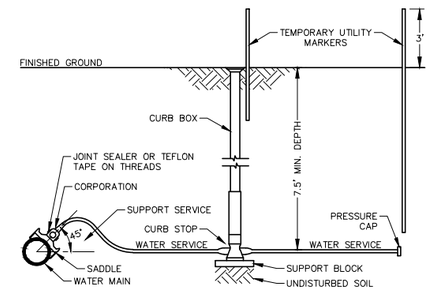
CITY OF WEST FARGO (STA 68+00 TO 175+32)



NOTES:
1. WRAP ALL UNDERGROUND METAL ITEMS WITH 8 MIL POLYETHYLENE PLASTIC.
2. VALVE AND BOX SHALL BE BACKFILLED WITH GRANULAR MATERIAL TO TOP COMPACTED TO 95% DENSITY.
3. PROVIDE RISER FOR NUT ON ANY VALVE OVER 7-1/2' DEEP.
4. TOP OF VALVE BOX SHALL BE SET TO PROVIDE 12" OF UPWARD ADJUSTMENT.

VALVE AND BOX

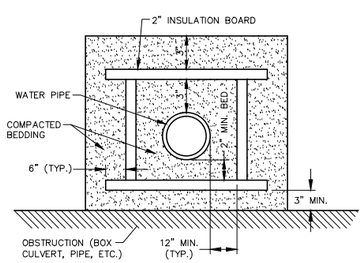
CITY OF WEST FARGO (STA 68+00 TO 175+32)



NOTES:
1. CURB BOX TO BE INSTALLED TO FINISHED GROUND ELEVATION AS SPECIFIED ON PLANS, HALFWAY EXTENDED.
2. ENTIRE SERVICE LINE TO BE PRESSURE TESTED.
3. SEE PLAN SHEETS FOR LOCATION OF CURB STOP AND END OF SERVICE.

WATER SERVICE

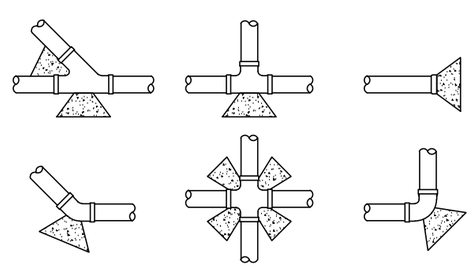
CITY OF WEST FARGO (STA 68+00 TO 175+32)



NOTE:
1. COMPACT PER WATER MAIN OR SERVICE TRENCH DETAIL.

WATER ENCASEMENT INSULATION

CITY OF WEST FARGO (STA 68+00 TO 175+32)

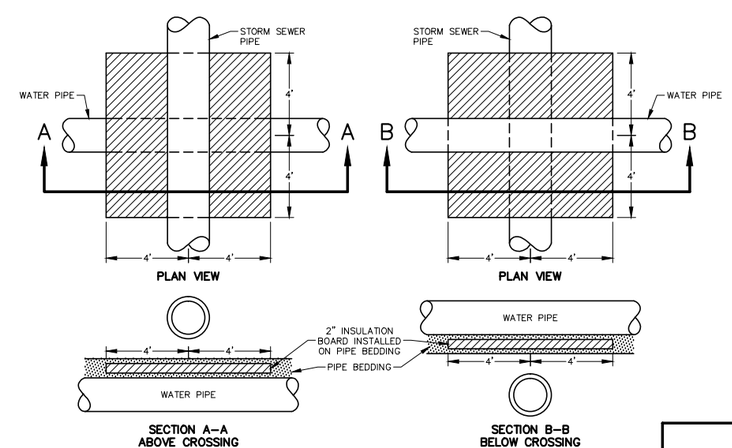


MINIMUM THRUST BLOCK SIZES										
	REQUIRED BEARING AREA (S.F.)									
PIPE DIAMETER	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
CROSS, DEAD END OR TEE	2	4	7	11	16	21	28	36	44	63
90 BEND	3	6	10	16	22	30	39	50	62	88
45 BEND	2	3	6	9	12	17	21	27	34	48
22 1/2 BEND	1	2	3	5	7	9	14	17	17	25

NOTE: ALL THRUST BLOCKS A MINIMUM OF 12" THICK AND MUST BEAR AGAINST UNDISTURBED SOIL.

THRUST BLOCKS

CITY OF WEST FARGO (STA 68+00 TO 175+32)



NOTES:
1. THIS DETAIL APPLIES TO BOTH MAINS & SERVICES WHERE CROSSING IS WITHIN 24".
2. IF AMOUNT OF CLEAR DISTANCE BETWEEN PIPES IS LESS THAN 1.0', 2 LAYERS OF 2" INSULATION BOARD SHALL BE USED.
3. WATER SERVICES MAY BE INSULATED WITH AN APPROVED ENCASEMENT INSULATION IN LIEU OF DETAIL.

WATER INSULATION FOR STORM CROSSING

CITY OF WEST FARGO (STA 68+00 TO 175+32)

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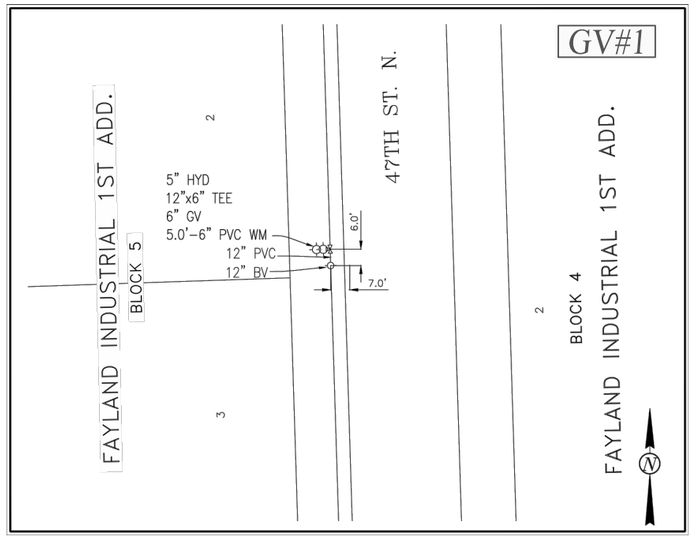
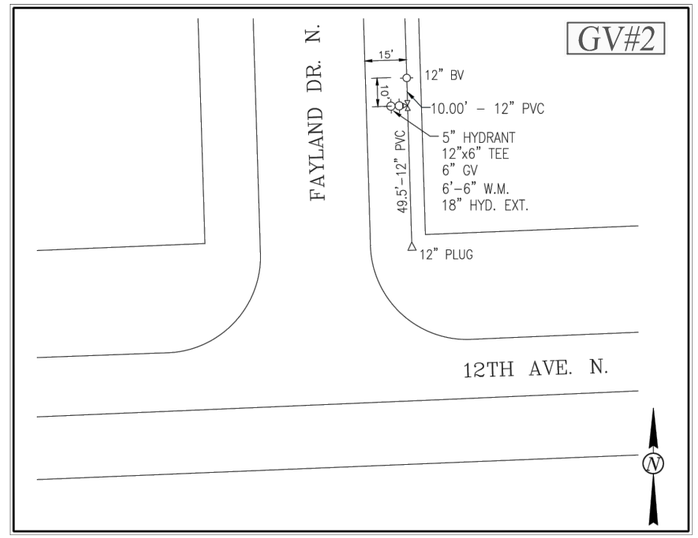
12TH AVENUE NORTH RECONSTRUCTION

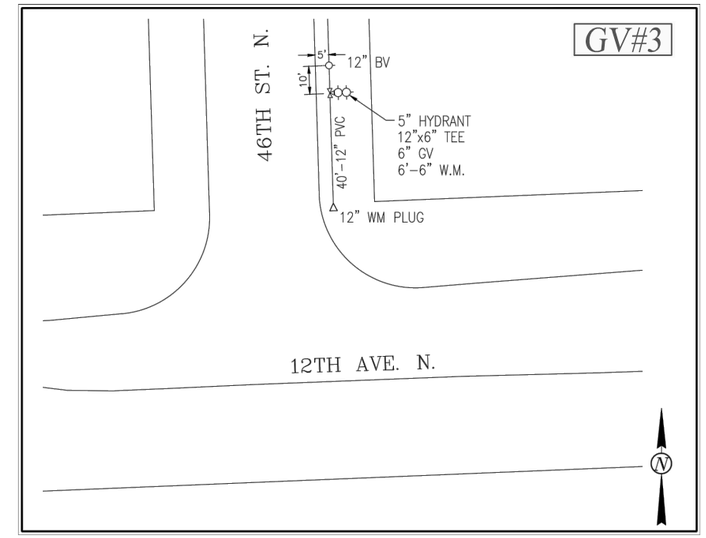
DETAILS

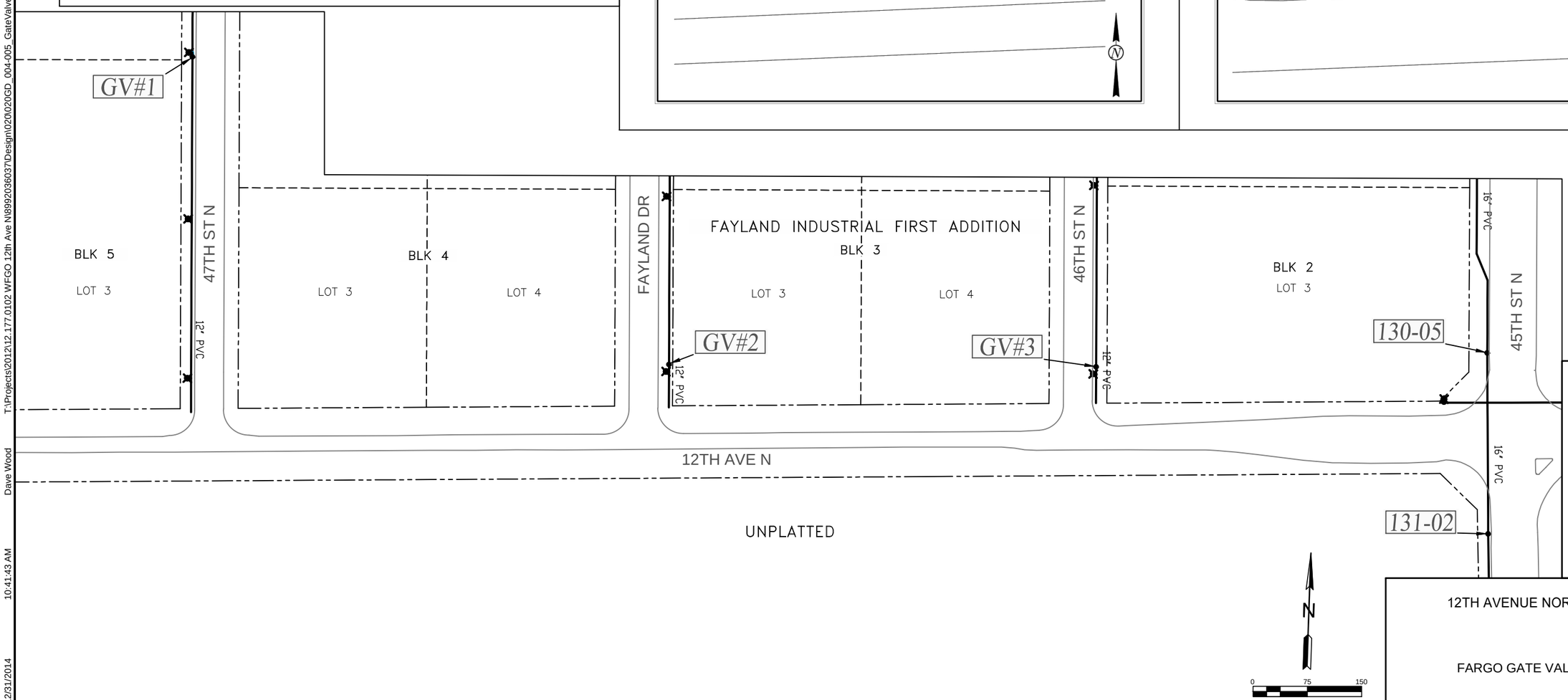
WEST FARGO WATER MAIN

Apex Engineering Group	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-992(036)037	20	4









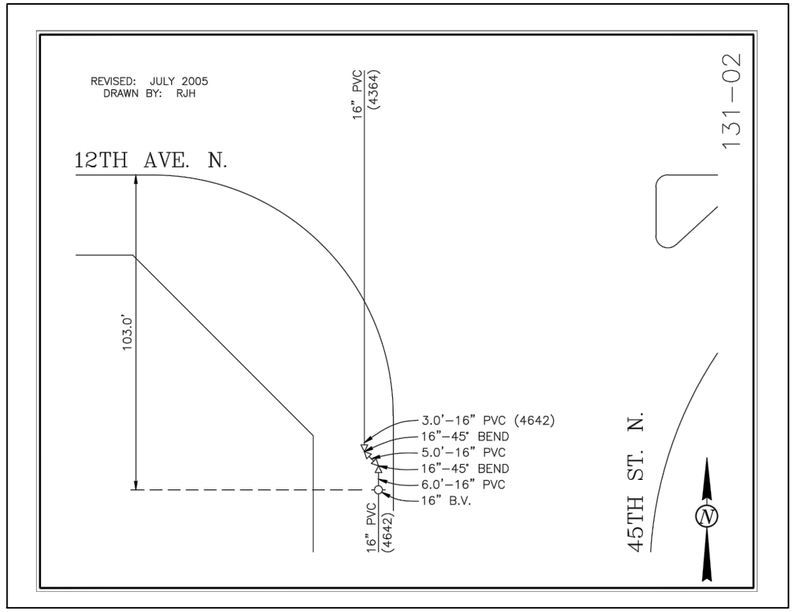
This document was originally issued and sealed by Brent Muscha Registration Number PE-7123 on 12/31/2014 and the original document is stored at the City of West Fargo.

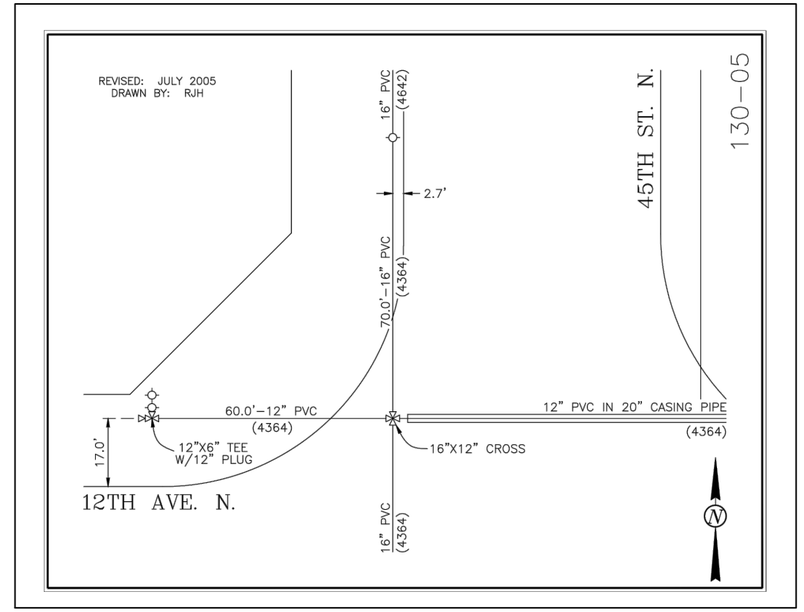
12TH AVENUE NORTH RECONSTRUCTION

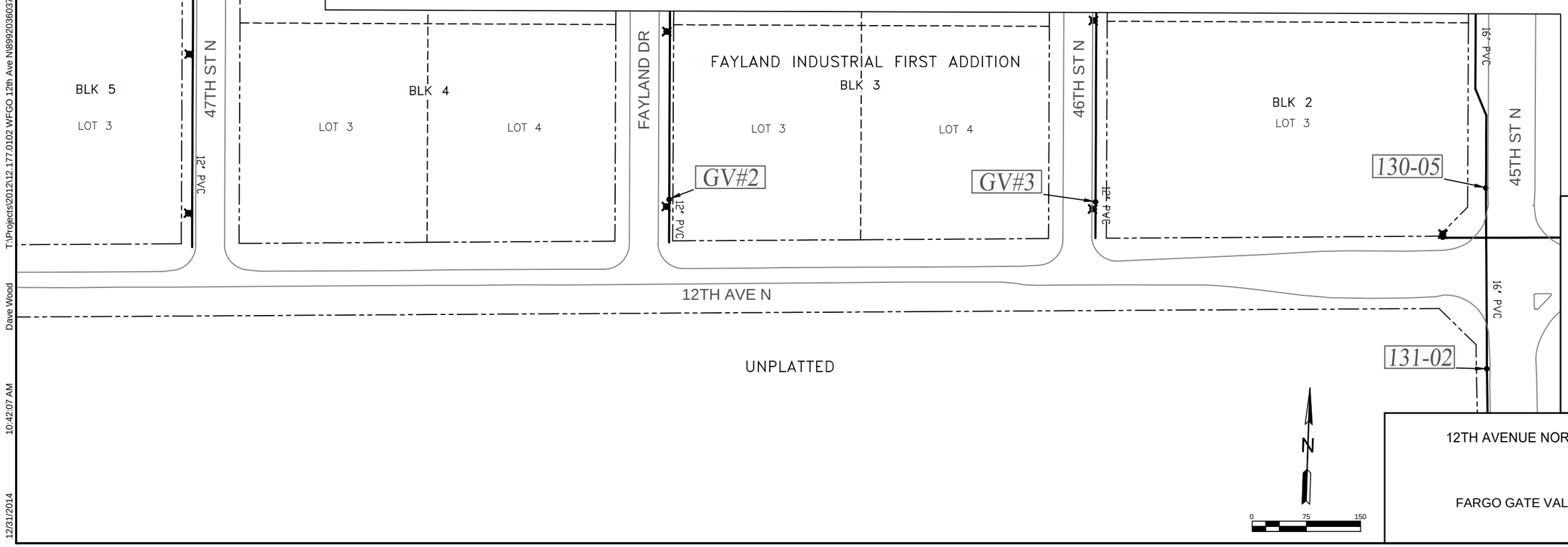
FARGO GATE VALVE LOCATION (1 OF 2)

T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\020\020GD_004-005_GateValve.dwg
Dave Wood
10:41:43 AM
12/31/2014

Apex Engineering Group	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-992(036)037	20	5







This document was originally issued and sealed by Brent Muscha Registration Number PE-7123 on 12/31/2014 and the original document is stored at the City of West Fargo.

12TH AVENUE NORTH RECONSTRUCTION

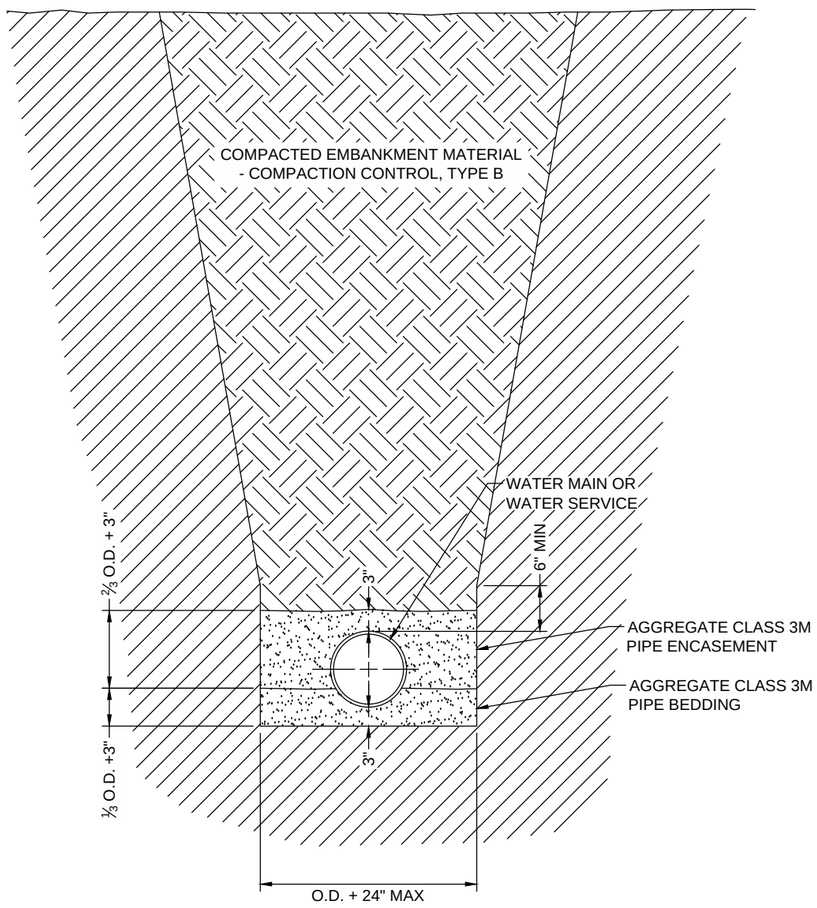
FARGO GATE VALVE LOCATION (2 OF 2)

T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\020\020GD_004-005_GateValve.dwg
Dave Wood
10:42:07 AM
12/31/2014

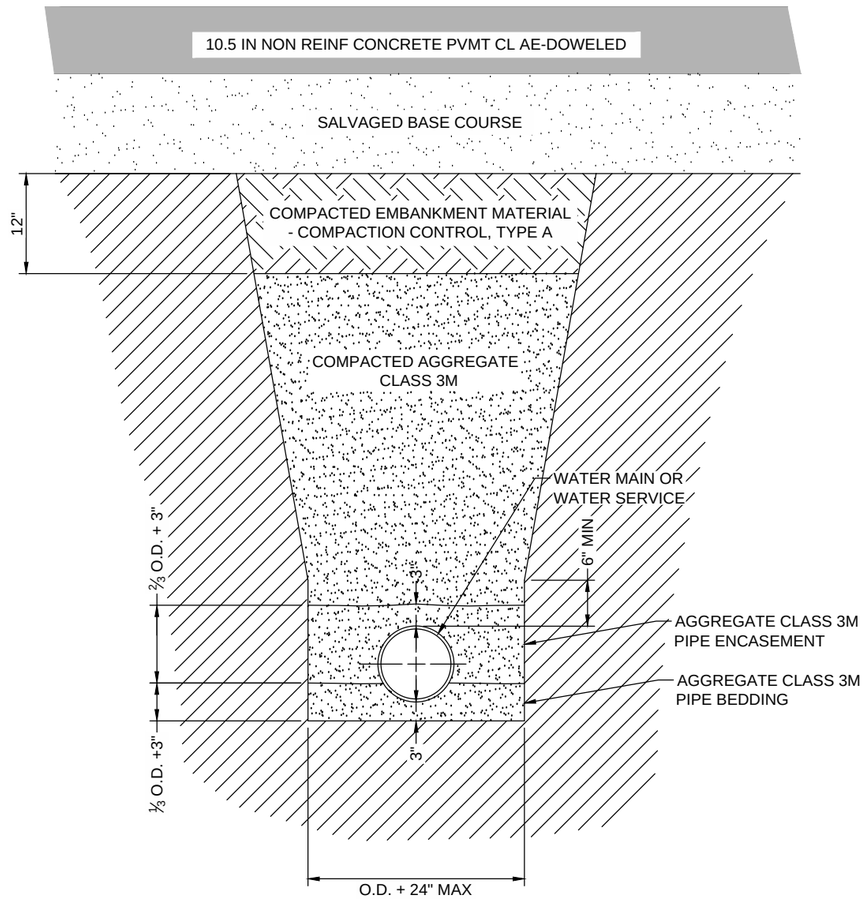
Apex Engineering Group	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-992(036)037	20	6

Notes:

1. Include the cost of pipe, excavation, aggregate, embankment material, and labor in the price bid for WATERMAIN _IN PVC.



WATER MAIN TRENCH BACKFILL - PIPE NOT UNDER ROADWAY
CITY OF FARGO (STA 184+79 TO STA 202+12)



WATER MAIN TRENCH BACKFILL - PIPE UNDER ROADWAY
CITY OF FARGO (STA 184+79 TO STA 202+12)

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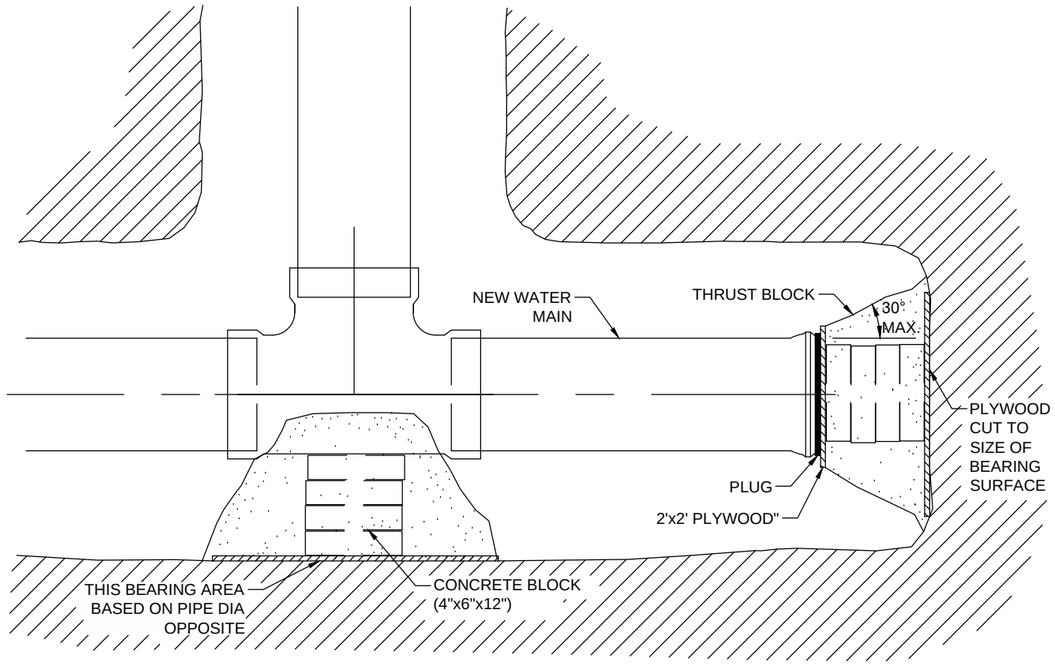
12TH AVENUE NORTH RECONSTRUCTION

DETAILS

FARGO WATER MAIN TRENCH BACKFILL

T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\020\020GD_006_WM-Trench-Backfill.dwg Mike Johnson 7:55:02 AM 7/21/2015

Apex Engineering Group	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-992(036)037	20	7



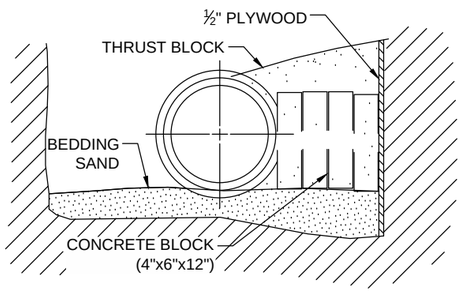
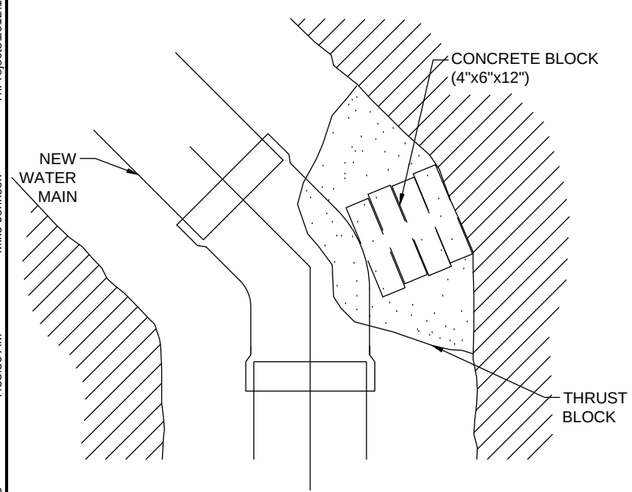
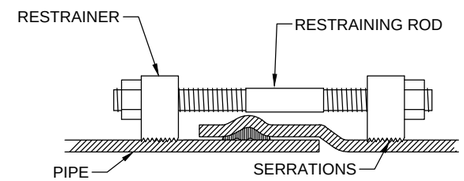


TABLE OF REQUIRED BEARING AREAS

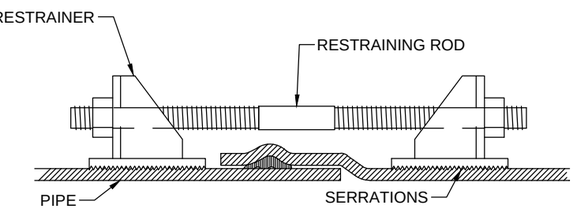
SIZE OF PIPE	90° BEND	45° BEND	22 1/2°	11 1/4°	TEE
4"	2' SQ.	2' SQ.	2' SQ.	2' SQ.	2' SQ.
6"	3' SQ.	2' SQ.	2' SQ.	2' SQ.	3' SQ.
8"	5' SQ.	3' SQ.	2' SQ.	2' SQ.	4' SQ.
10"	8' SQ.	4' SQ.	3' SQ.	2' SQ.	6' SQ.
12"	11' SQ.	6' SQ.	3' SQ.	2' SQ.	8' SQ.
16"	20' SQ.	11' SQ.	6' SQ.	4' SQ.	15' SQ.
18"	25' SQ.	14' SQ.	7' SQ.	4' SQ.	18' SQ.



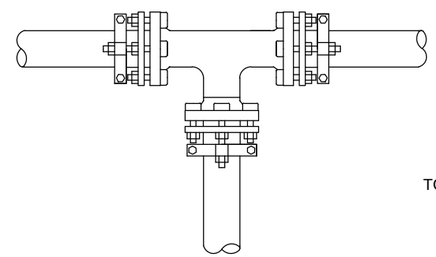
WATER MAIN THRUST BLOCKING
CITY OF FARGO (STA 184+79 TO STA 202+12)

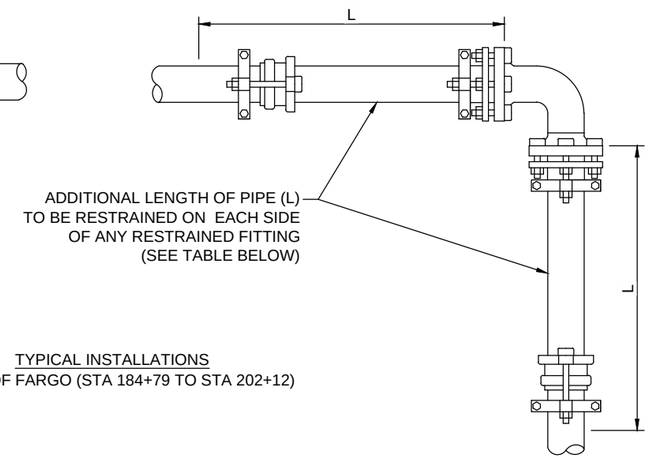


2" TO 12" DIA.



14" TO 36" DIA.





TYPICAL INSTALLATIONS
CITY OF FARGO (STA 184+79 TO STA 202+12)

Notes:

1. Tee & plug blocking shown, tapping sleeve blocking similar.
2. Wrap all fittings in polyethylene no less than 8 mils thick.
3. Pour concrete blocking against undisturbed earth. Keep bells and bolts free of concrete. Include the cost of concrete in place in the price bid for water main.
4. Solid concrete blocks may be used for blocking 8" dia. pipe and below if approved. 10" dia. pipe and above will conform to concrete poured in place areas as shown.
5. Use restraining devices that meet or exceed the requirements of ASTM F1694 such as Uni-Flange PVC Restraints, EBBA Iron Series 2000PV, or approved equal.
6. Wrap all fittings and restraining devices in polyethylene plastic film no less than 8 mils thick.

RESTRAINED LENGTHS OF PVC PIPE

NOM. PIPE SIZE	90° BEND (L)	45° BEND (L)	22.5° BEND (L)	11.25° BEND (L)	SIZE ON SIZE TEE(L)*	VALVE/ DEAD-END(L)
6"	19'	8'	4'	2'	2'	35'
8"	25'	11'	5'	3'	13'	45'
10"	31'	13'	6'	3'	23'	55'
12"	36'	15'	8'	4'	33'	65'
16"	47'	20'	10'	5'	52'	84'

* Recommended restrained lengths for tees are for the branch outlet and assume a minimum 10 foot section of pipe attached to each side of the run. Restraint devices are also required on both runs of the tee itsself.

SIZE	45° VERT. OFFSET* (L)	22 1/2° VERT. OFFSET* (L)
6"	15'/8'	7'/4'
8"	19'/11'	9'/5'
10"	23'/13'	11'/6'
12"	27'/15'	13'/8'
16"	35'/20'	17'/10'

* First number is the recommended restrained length on each side of the down bend, the second number is the length for each side of the up bend.

RESTRAINT DEVICE FOR PVC PIPE BELL JOINTS
CITY OF FARGO (STA 184+79 TO STA 202+12)

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12TH AVENUE NORTH RECONSTRUCTION

DETAILS

FARGO WATER MAIN THRUST BLOCKING & RESTRAINT

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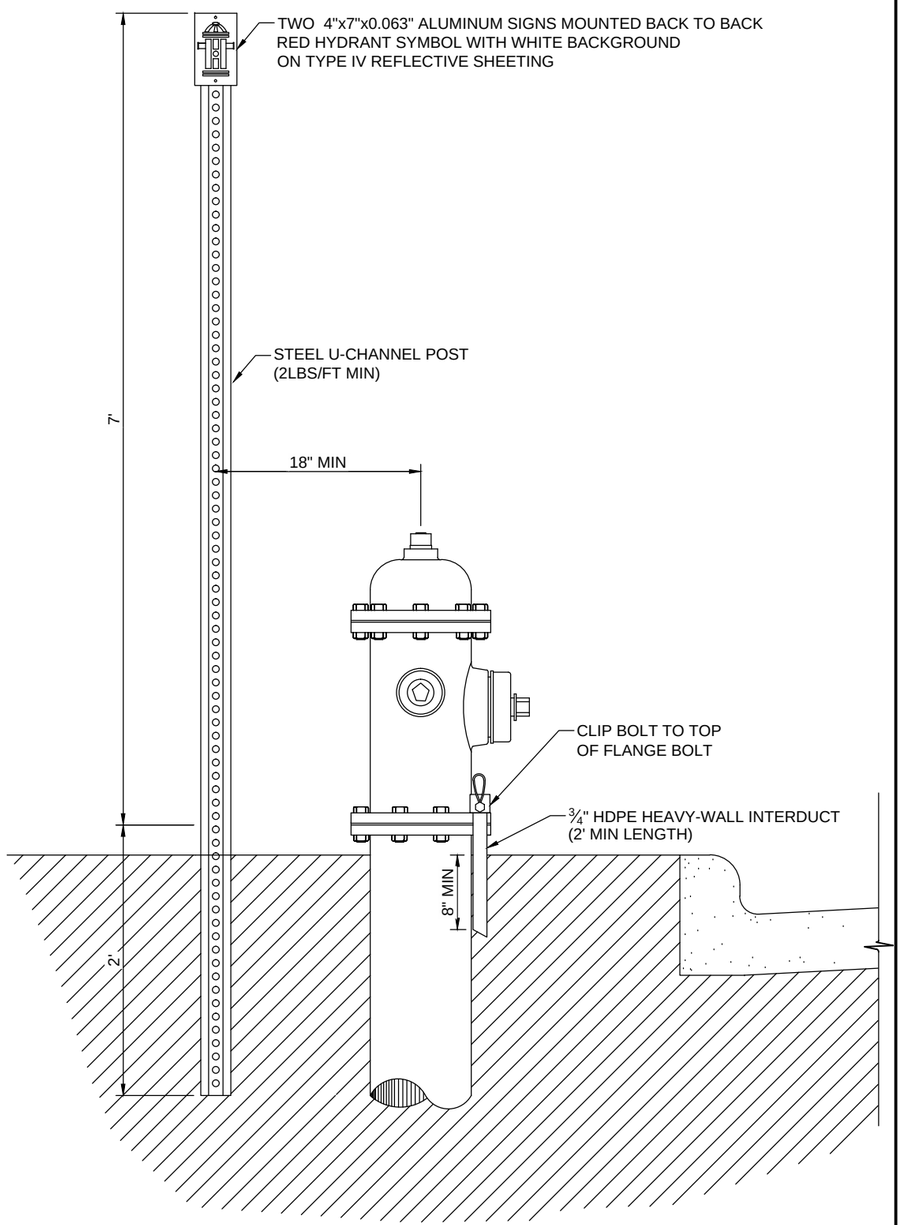
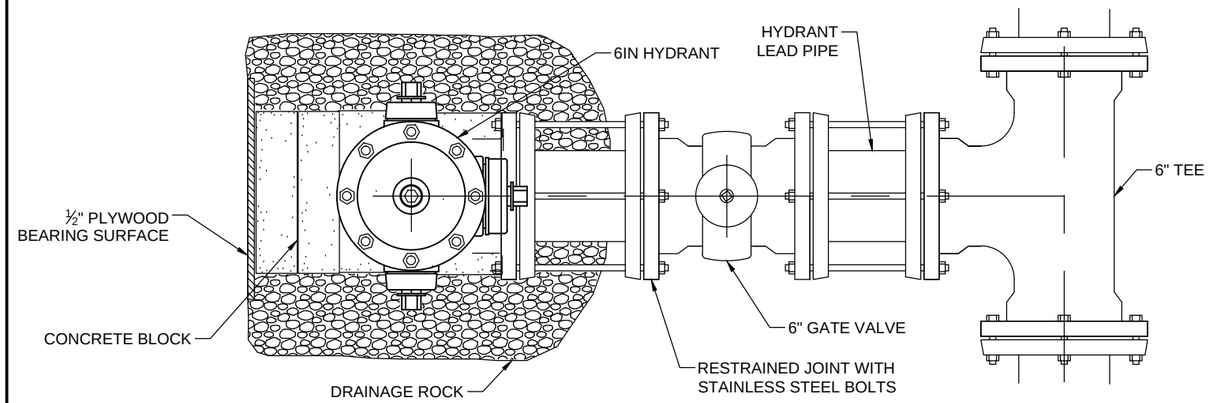
7/21/2015

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	20	8



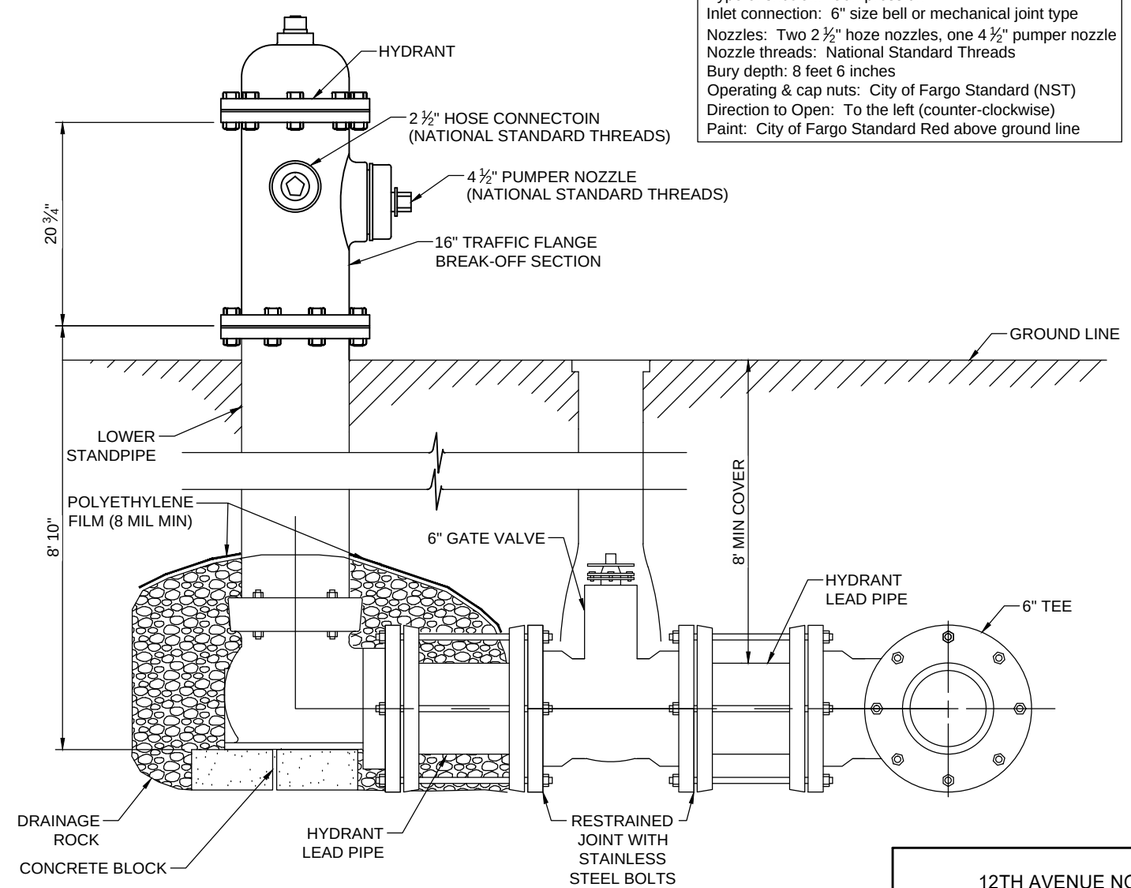
HYDRANT MARKER
CITY OF FARGO (STA 184+79 TO STA 202+12)



Notes:

1. Use non-jacket type hydrants meeting AWWA C502 and capable of being extended in 6" increments such as Waterous WB67, American Darling B62B-1, or approved equal.
2. Use stainless steel bolts and nuts below ground.
3. Wrap lower standpipe with polyethylene plastic film no less than 8 mils thick.
4. Include the cost of furnishing and installing hydrant markers in the price bid for HYDRANT-INSTALL 5IN.
5. Use cast iron resilient-seated gate valves and tapping valves meeting AWWA C509 or ductile iron resilient-seated gate valves and tapping valves meeting AWWA C515. Use valve seats capable of withstanding 200 psi and valve bodies capable of withstanding 400 psi.

Minimum valve opening: 5"
Hydrant barrell: 7 ⅜" minimum inside diameter
Type of shut-off: Compression
Inlet connection: 6" size bell or mechanical joint type
Nozzles: Two 2 ½" hoze nozzles, one 4 ½" pumper nozzle
Nozzle threads: National Standard Threads
Bury depth: 8 feet 6 inches
Operating & cap nuts: City of Fargo Standard (NST)
Direction to Open: To the left (counter-clockwise)
Paint: City of Fargo Standard Red above ground line



HYDRANT WITH RESTRAINED MECHANICAL JOINT
CITY OF FARGO (STA 184+79 TO STA 202+12)

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12TH AVENUE NORTH RECONSTRUCTION

DETAILS

FARGO HYDRANT

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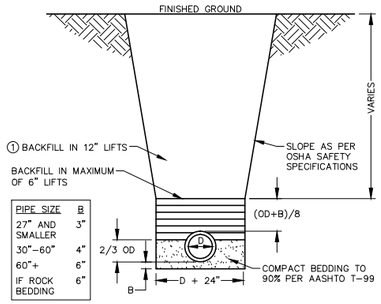
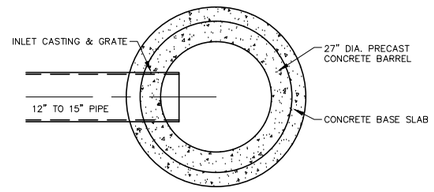


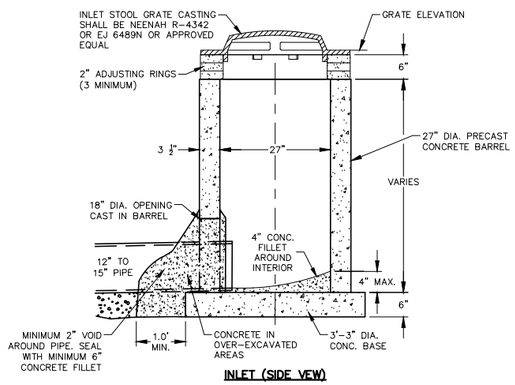
① COMPACT TO 95% MINIMUM STANDARD PROCTOR DENSITY.

RCP STORM SEWER TRENCH

NO SCALE CITY OF WEST FARGO (STA 68+00 TO 175+32)



INLET (PLAN VIEW)

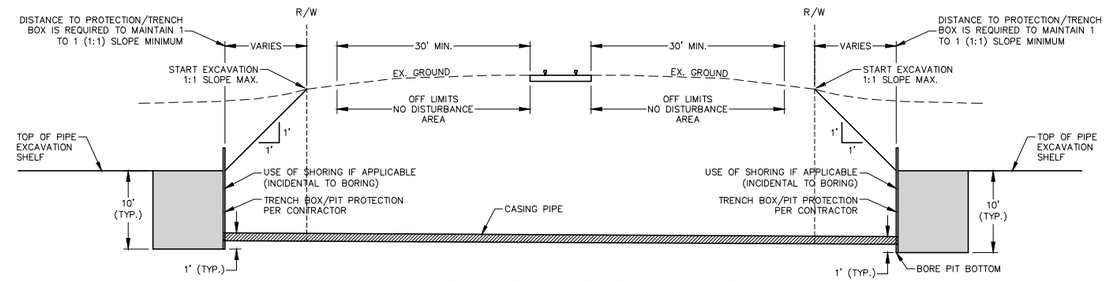


INLET (SIDE VIEW)

NOTES:
1. USE PRECAST OR CAST IN PLACE BASES.
2. USE NEENAH R–4342 OR EJ 6489N CASTING OR APPROVED EQUAL.
3. CONSTRUCT INLET RISERS OR BARRELLS APPROXIMATELY 6" BELOW FINAL ELEVATION AND ADJUST TO GRADE AFTER FINAL PAVING. USE ADJUSTMENT RINGS, MASONRY, OR CAST IN PLACE ADJUSTMENT RINGS. INCLUDE THE COST FOR ADJUSTING IN THE BID PRICE FOR INLET.

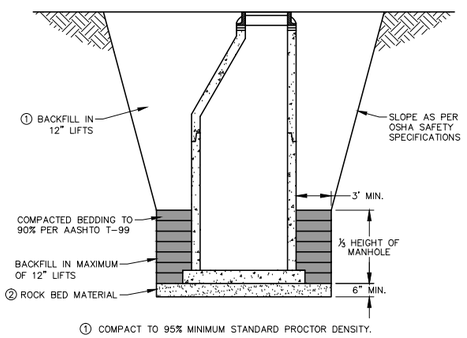
INLET

CITY OF WEST FARGO (STA 68+00 TO 175+32)



RAILROAD BORE & CASING LIMITS

CITY OF WEST FARGO (STA 68+00 TO 175+32)



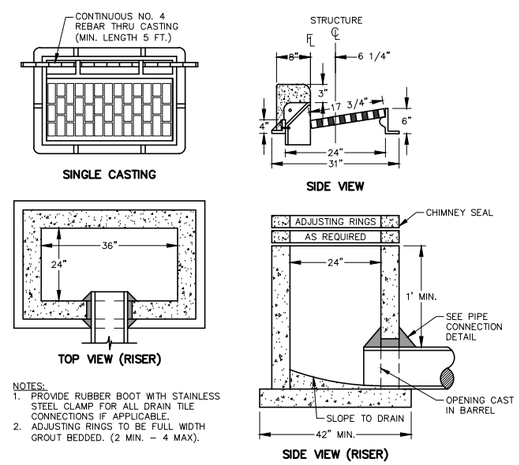
① COMPACT TO 95% MINIMUM STANDARD PROCTOR DENSITY.

② ROCK FOR BEDDING AND COMPACTED GRANULAR MATERIAL ARE INCIDENTAL TO MANHOLE INSTALLATION.

③ DETAIL SHALL BE USED FOR ALL MANHOLES, INLETS, AND CATCH BASINS.

MANHOLE/INLET/CATCH BASIN TRENCH

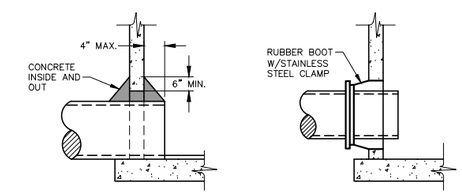
CITY OF WEST FARGO (STA 68+00 TO 175+32)



NOTES:
1. PROVIDE RUBBER BOOT WITH STAINLESS STEEL CLAMP FOR ALL DRAIN TILE CONNECTIONS IF APPLICABLE.
2. ADJUSTING RINGS TO BE FULL WIDTH GROUT BEDDED. (2 MIN. – 4 MAX).

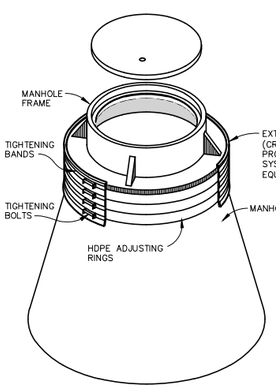
INLET - TYPE 2

CITY OF WEST FARGO (STA 68+00 TO 175+32)

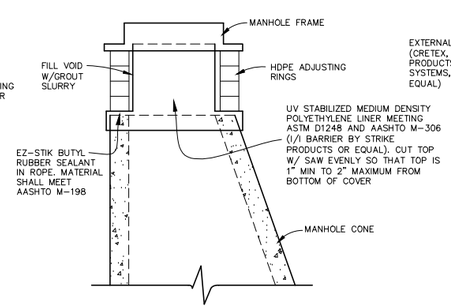


STORM SEWER PIPE CONNECTION

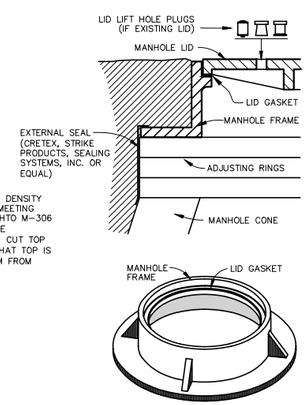
CITY OF WEST FARGO (STA 68+00 TO 175+32)



EXTERNAL MANHOLE SEAL (OPTION 1)



EXTERNAL MANHOLE SEAL (OPTION 2)

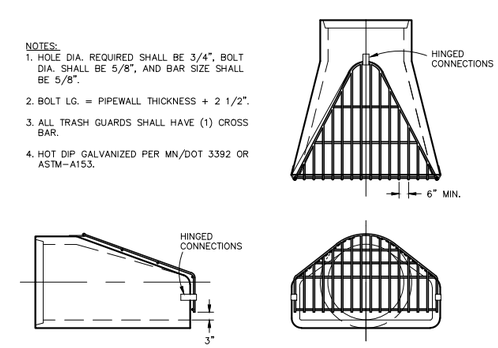


MANHOLE LID GASKET DETAIL
(PROVIDED BY UNDERGROUND CONTRACTOR)

MANHOLE SEALS DETAIL

CITY OF WEST FARGO (STA 68+00 TO 175+32)

NOTES:
1. HOLE DIA. REQUIRED SHALL BE 3/4", BOLT DIA. SHALL BE 5/8", AND BAR SIZE SHALL BE 5/8".
2. BOLT LG. = PIPEWALL THICKNESS + 2 1/2".
3. ALL TRASH GUARDS SHALL HAVE (1) CROSS BAR.
4. HOT DIP GALVANIZED PER MN/DOT 3392 OR ASTM–A153.



TRASH RACK

CITY OF WEST FARGO (STA 68+00 TO 175+32)

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12TH AVENUE NORTH RECONSTRUCTION

DETAILS

WEST FARGO STORM SEWER & LANDSCAPING

FILE LOCATION: R:\Civil 3D Projects\16843\DRAWINGS\DESIGN\16843-DETAILS.dwg
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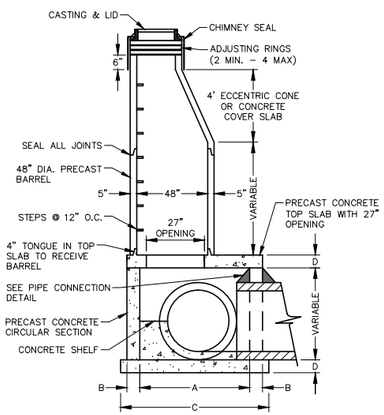
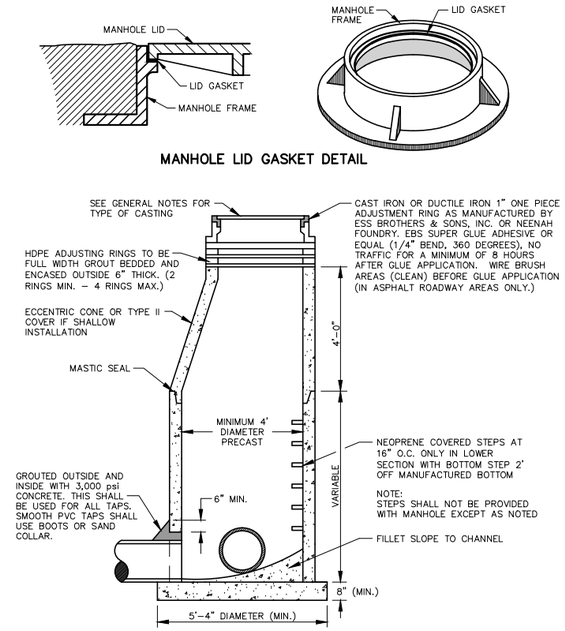


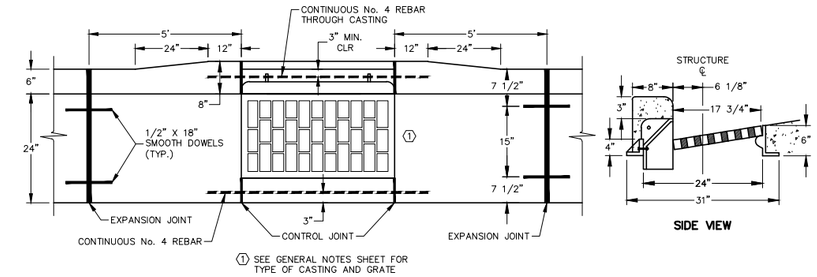
TYPICAL DIMENSIONS			
A	B	C	D
48"	5"	66"	6"
54"	5.5"	72"	6"
60"	6"	78"	8"
66"	6.5"	86"	8"
72"	7"	92"	8"
78"	7.5"	100"	8"
84"	8"	106"	8"
90"	8.5"	114"	8"
96"	9"	120"	8"
102"	9.5"	127"	12"
108"	10"	132"	12"
120"	11"	146"	12"

WITH DEEP AND LARGE PIPE
NO SCALE



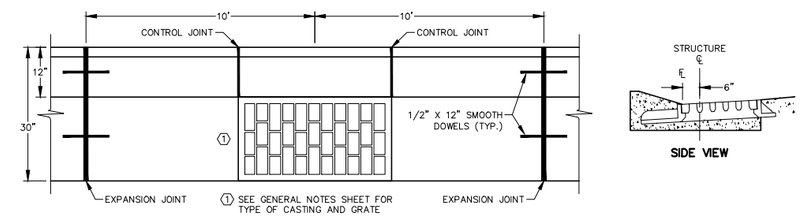
WITH SHALLOW AND SMALL PIPE
NO SCALE

MANHOLE LID GASKET DETAIL



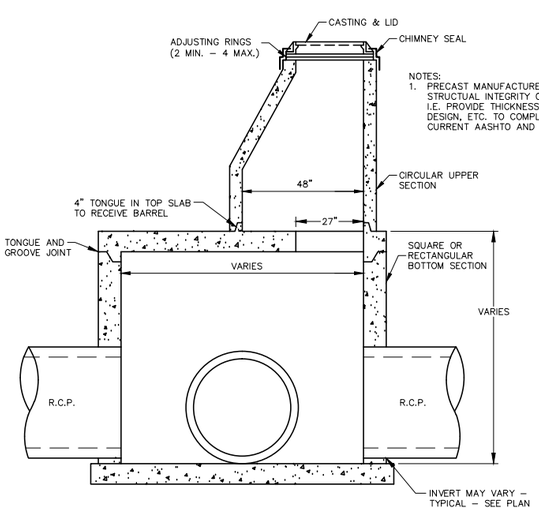
CURB AND GUTTER INLET WITH HIGH BACK CURB

CITY OF WEST FARGO (STA 68+00 TO 175+32)

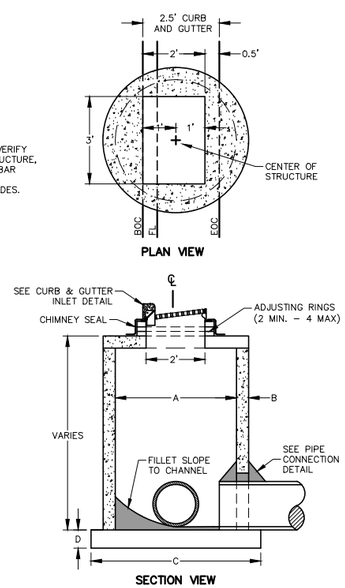


CURB AND GUTTER INLET WITH MOUNTABLE CURB

CITY OF WEST FARGO (STA 68+00 TO 175+32)



MULTI-MANHOLE
NO SCALE



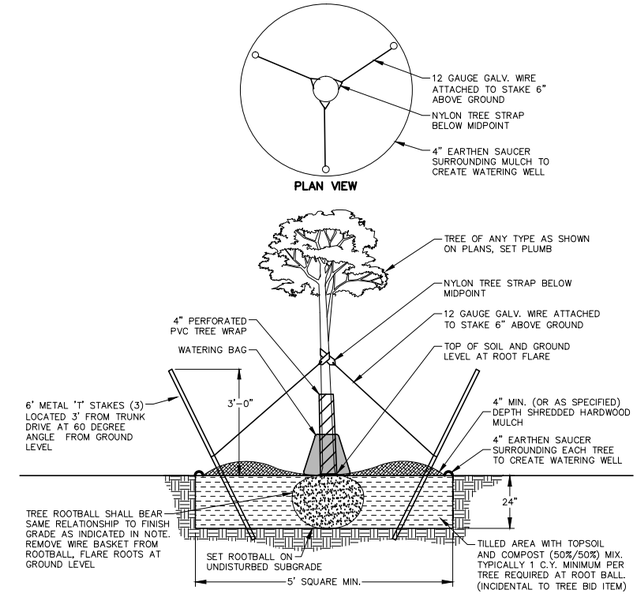
TYPICAL DIMENSIONS			
A	B	C	D
48"	5"	66"	6"
54"	5.5"	72"	6"
60"	6"	78"	8"
66"	6.5"	86"	8"
72"	7"	92"	8"
78"	7.5"	100"	8"
84"	8"	106"	8"
90"	8.5"	114"	8"
96"	9"	120"	8"
102"	9.5"	127"	12"
108"	10"	132"	12"
120"	11"	146"	12"

NOTES:
1. PROVIDE RUBBER BOOT WITH STAINLESS STEEL CLAMP FOR ALL DRAIN TILE CONNECTIONS IF APPLICABLE.
2. ADJUSTING RINGS TO BE FULL WIDTH GROUT BEDDED. (2 MIN. – 4 MAX).
3. SEE CURB AND GUTTER DETAIL FOR CASTING PLACEMENT.

WITH CURB CASTING
NO SCALE

STORM SEWER MANHOLE

CITY OF WEST FARGO (STA 68+00 TO 175+32)



NOTES:
1. REMOVE MIN. TOP 2/3 OF BURLAP FROM ROOTBALL, REMOVE ALL TREATED GREEN BURLAP.
2. REMOVE ALL WIRE BASKETS.
3. AFTER TREE IS POSITIONED IN PLACE, REMOVE ALL TWINE, ROPE, PLASTIC, RUBBER AND WIRE BASKETS.
4. PLANT ROOTBALL 2" ABOVE SURROUNDING GRADE IN CLAY SOIL AND AT GRADE IN SANDY SOIL.
5. ALL ITEMS INCLUDED IN "TREE" ITEM.
6. SPADED TREE IS AN ACCEPTABLE ALTERNATIVE. MULCH RING SHALL EXCEED 1' BEYOND SPADED RING. OTHERWISE ALL TREE REQUIREMENTS SHALL APPLY.
7. SOIL SHALL BE FREE OF CONSTRUCTION DEBRIS, GRAVEL AND OTHER WASTE.

TREE PLANTING

CITY OF WEST FARGO (STA 68+00 TO 175+32)

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12TH AVENUE NORTH RECONSTRUCTION

DETAILS

WEST FARGO STORM SEWER & LANDSCAPING

FILE LOCATION: R:\Civil 3D Projects\16843\DRAWINGS\DESIGN\16843-DETAILS.dwg

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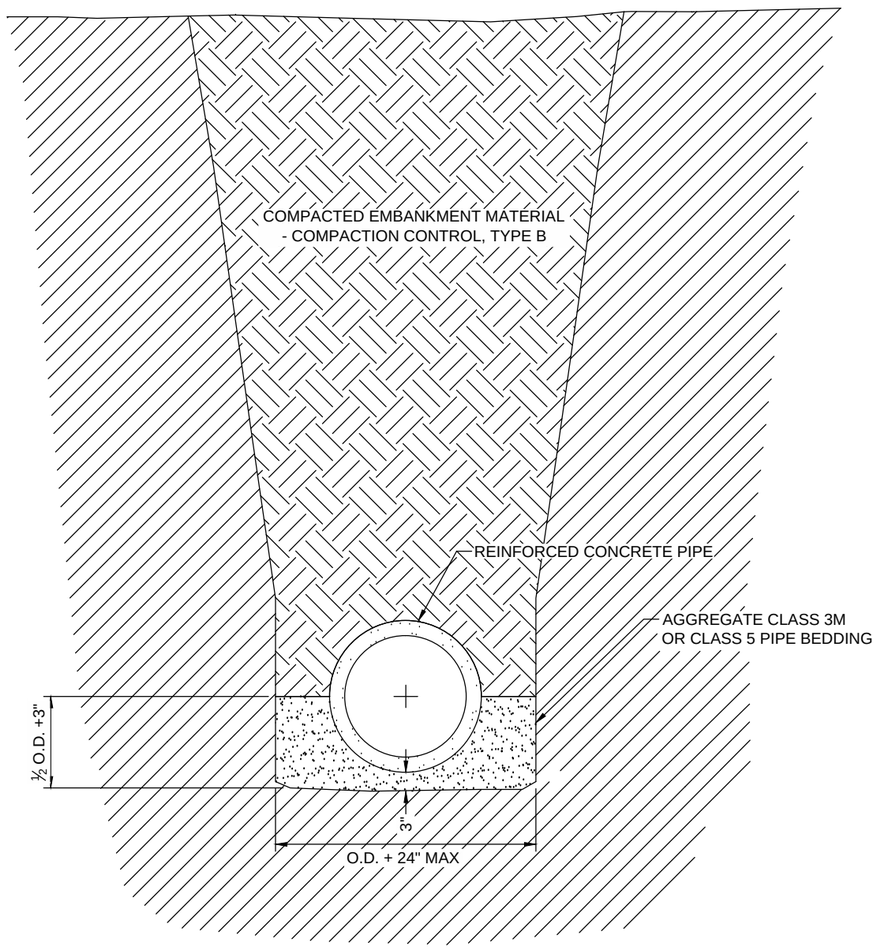
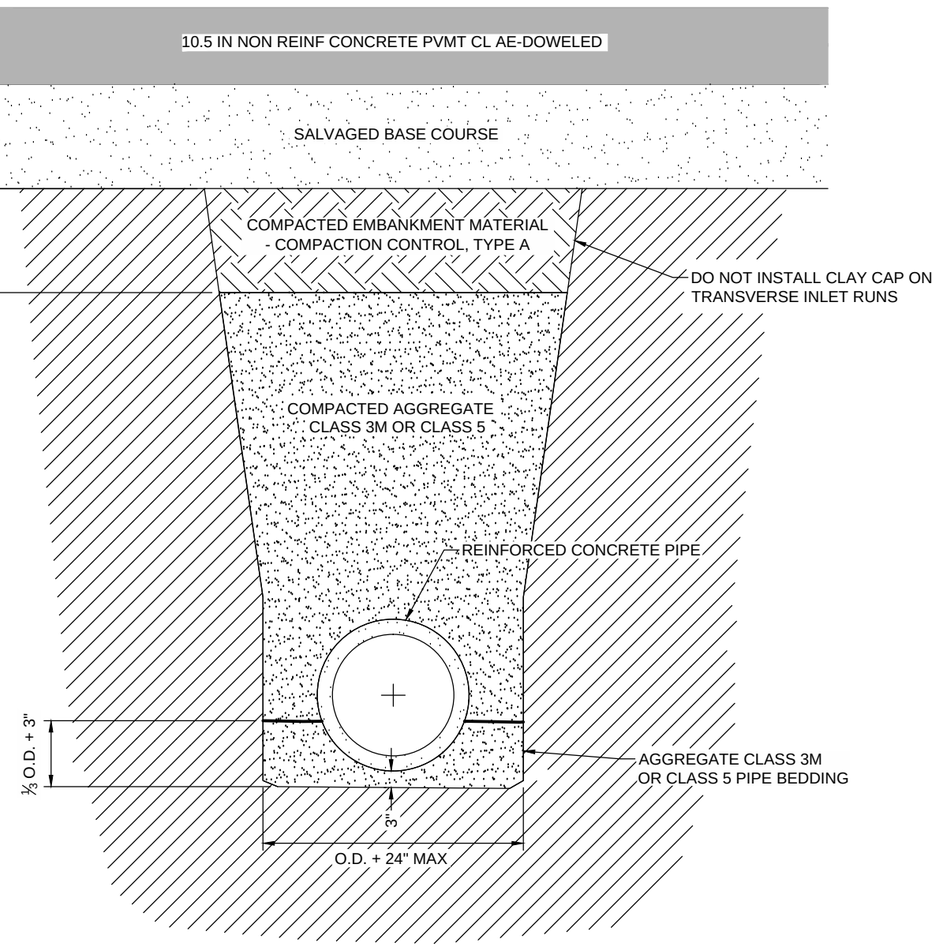
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	20	11

Notes:

1. Plug and mortar all lifting holes prior to backfilling.
2. Include the cost of pipe, excavation, aggregate, and labor in the price bid for PIPE CONC REINF __IN CL III-STORM DRAIN.



STORM SEWER TRENCH BACKFILL - PIPE NOT UNDER ROADWAY
CITY OF FARGO (STA 175+32 TO STA 202+12)



STORM SEWER BACKFILL - PIPE UNDER ROADWAY
CITY OF FARGO (STA 175+32 TO STA 202+12)

This document was originally issued and sealed by Brent Muscha Registration Number PE–7123 on 12/31/2014 and the original document is stored at the City of West Fargo.

12TH AVENUE NORTH RECONSTRUCTION

DETAILS

FARGO STORM SEWER TRENCH BACKFILL

12/31/2014 10:58:47 AM Dave Wood T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\020\020GD_011_Storm-Trench-Bfill.dwg

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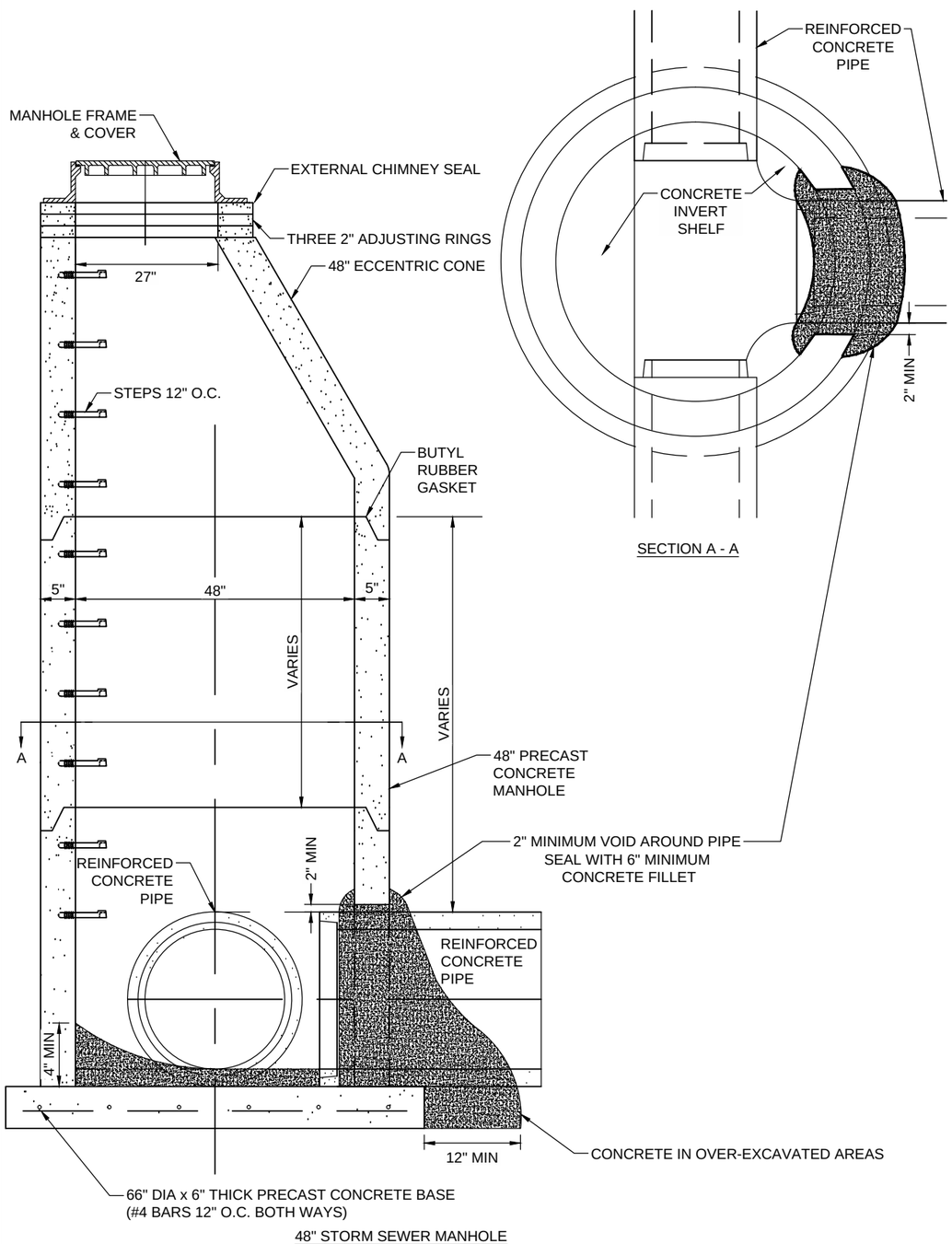
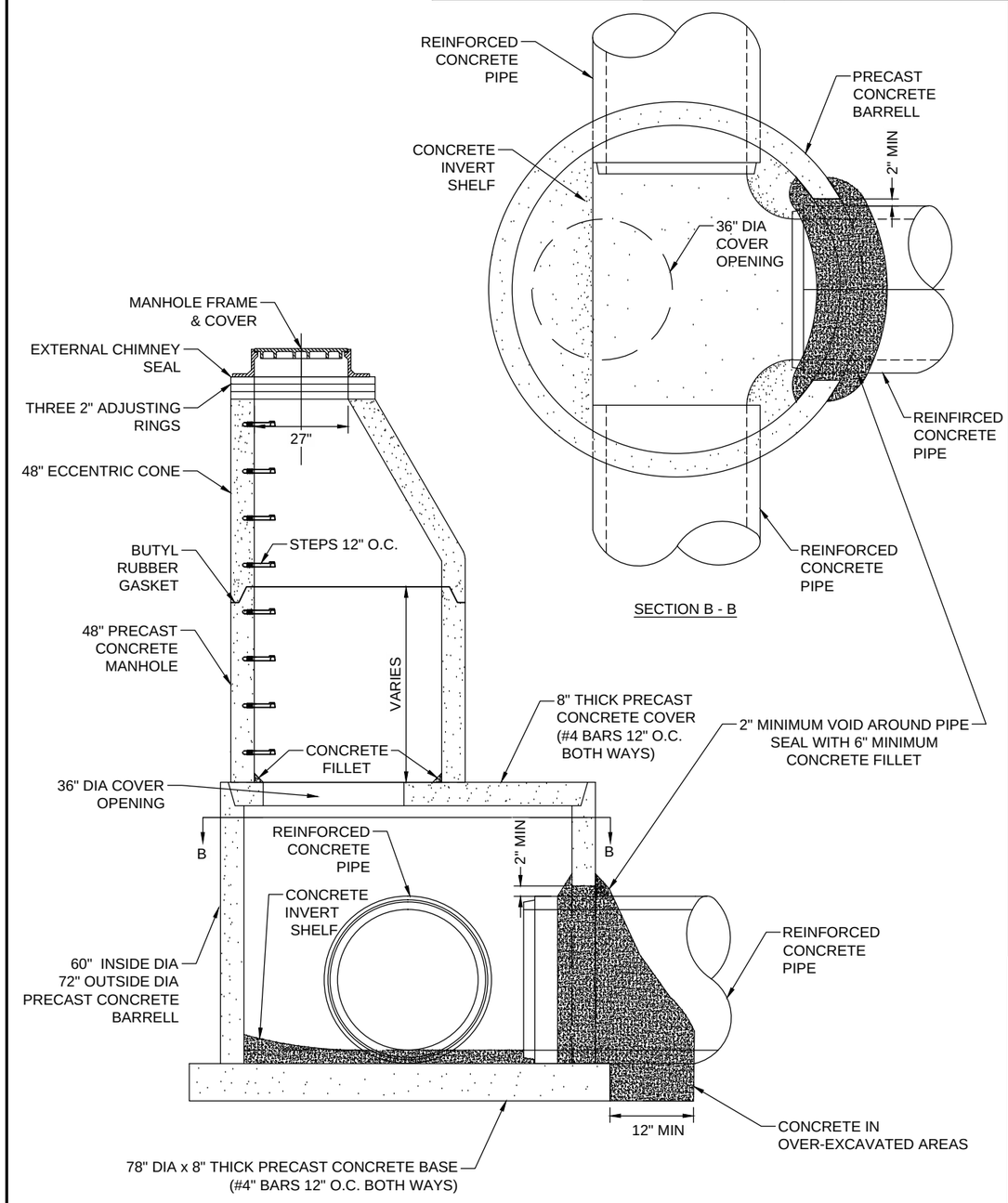


SECTION A - A

48" STORM SEWER MANHOLE
CITY OF FARGO (STA 175+32 TO STA 202+12)



SECTION B - B

60" STORM SEWER MANHOLE
CITY OF FARGO (STA 175+32 TO STA 202+12)

Notes:

1. Set manhole base on 4" of bedding sand. If trench is wet or unstable, set manhole base on 6" of 1 ¼" crushed rock.
2. Continue the main sewer through manholes by split pipe where practicable. Otherwise, construct the invert with concrete at the same radius as the lower ½ of the pipe it connects to. Construct side branch inverts with the largest possible radius
3. Slope the concrete invert shelf at 2" per foot.
4. Construct all joints with butyl rubber gaskets (joint to meet ASTM 433).
5. Plug and mortar all lifting holes prior to backfilling.
6. Use adjusting rings composed of engineered polymer - either injenction molded high density polyethyelene manufactured by Ladtech, Inc., or IPEX, Inc., or expanded polypropylene manufactured by JSP, or approved equal. Make fine adjustments with thin/tapered rings. Do not use steel shims. Use rings meeting AASHTO HS-20 loading. HDPE rings, if used, must conform to ASTM D-4976 using 100% recycled material.
7. Use floating manhole castings for manholes in the paved roadway. Where floating manhole castings are not specified, use Neenah R-1733, EJ 1205EZ, or approved equal manhole frame and cover with "STORM" or "STORM SEWER" in the center of the cover in 1 inch minimum letters.
8. Adjust the casting to grade according to Section 2100 of the City of Fargo Standard Specifications. Include the cost of materials and labor to adjust the casting to grade in the price bid for MANHOLE __IN.

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12TH AVENUE NORTH RECONSTRUCTION

DETAILS

FARGO STORM SEWER MANHOLE

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Dave Wood
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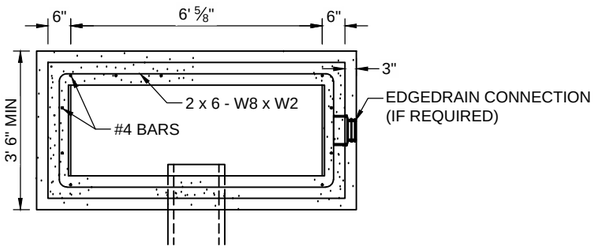
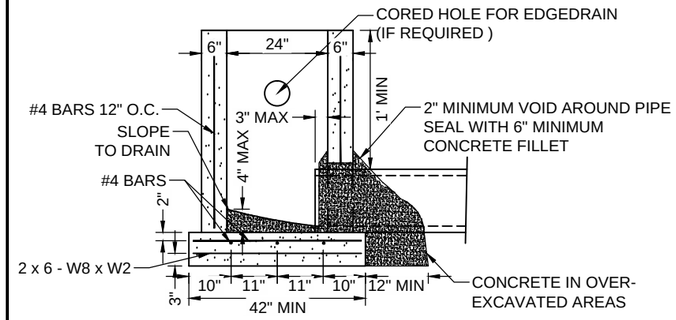
12/31/2014

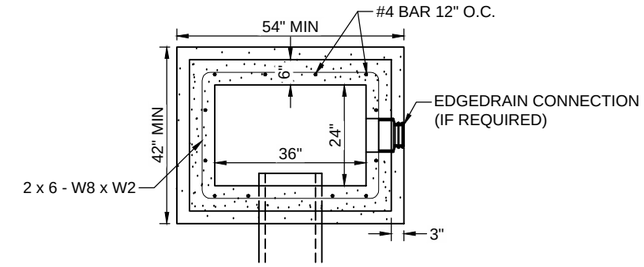
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	20	13



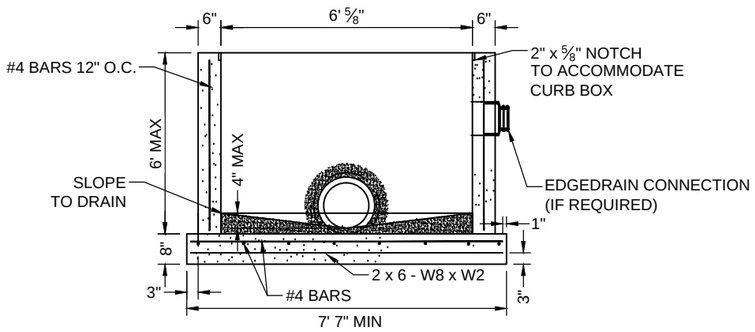
INLET-TYPE 2 DOUBLE (PLAN VEW)
CITY OF FARGO (STA 175+32 TO STA 202+12)



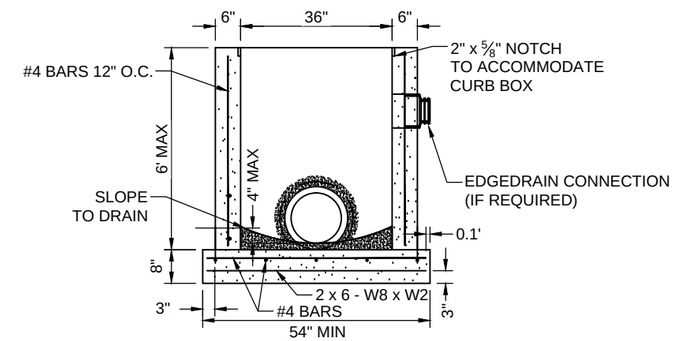
INLET-TYPE 2 AND INLET-TYPE 2 DOUBLE (SIDE VEW)
CITY OF FARGO (STA 175+32 TO STA 202+12)



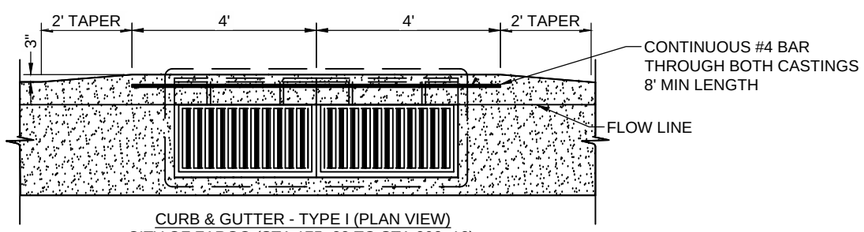
INLET - TYPE 2 (PLAN VIEW)
CITY OF FARGO (STA 175+32 TO STA 202+12)



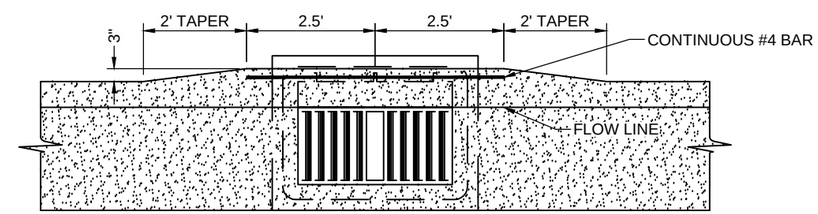
INLET-TYPE 2 DOUBLE (FRONT VEW)
CITY OF FARGO (STA 175+32 TO STA 202+12)



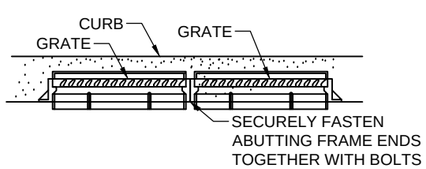
INLET - TYPE 2 (FRONT VIEW)
CITY OF FARGO (STA 175+32 TO STA 202+12)



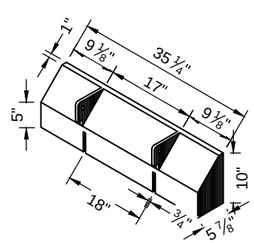
CURB & GUTTER - TYPE I (PLAN VIEW)
CITY OF FARGO (STA 175+32 TO STA 202+12)



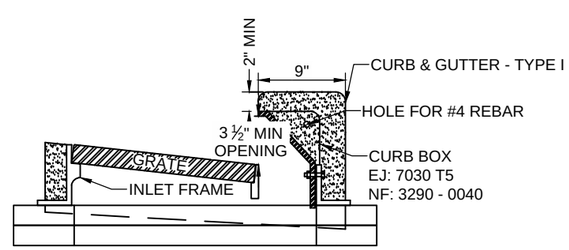
CURB & GUTTER - TYPE I (PLAN VIEW)
CITY OF FARGO (STA 175+32 TO STA 202+12)



DOUBLE GRATE (FRONT VIEW)
CITY OF FARGO (STA 175+32 TO STA 202+12)



CURB BOX
CITY OF FARGO (STA 175+32 TO STA 202+12)



CURB & GUTTER - TYPE I (PROFILE VIEW)
CITY OF FARGO (STA 175+32 TO STA 202+12)

Notes:

1. Use precast or cast in place bases.
2. For Use Neenah 3290-0040 or EJ T5 curb box or approved equal.
3. Construct inlet risers or barrells 4" to 5" below final elevation and adjust to grade after final paving. Use adjustment rings, masonry, or cast in place adjustment rings. Include the cost for adjusting in the bid price for INLET - TYPE 2.
4. Use grate sytle "V".

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12TH AVENUE NORTH RECONSTRUCTION

DETAILS

FARGO INLET-TYPE 2 & INLET-TYPE 2 DOUBLE

T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\020\020GD_013_Storm-Sewer-Inlet-Type-2.dwg Dave Wood 11:02:33 AM 12/31/2014

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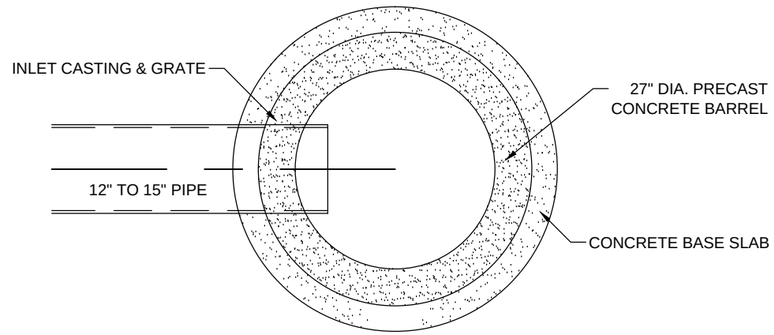
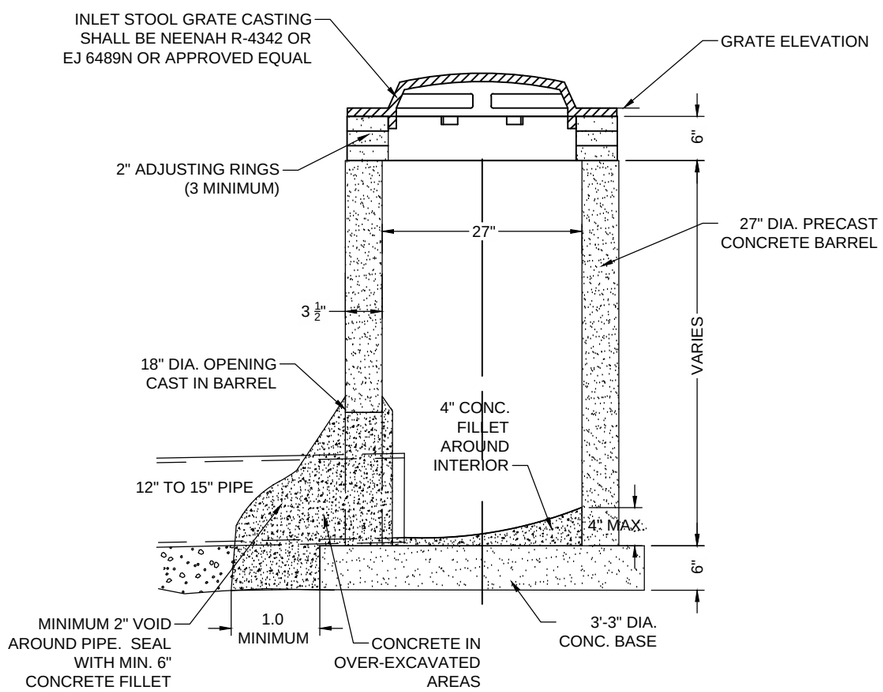
	ND	SU-8-992(036)037	20	14

Notes:

1. Use precast or cast in place bases.
2. Use Neenah R-4342 or EJ 6489N casting or approved equal.
3. Construct inlet risers or barrells approximately 6" below final elevation and adjust to grade after final paving. Use adjustment rings, masonry, or cast in place adjustment rings. Include the cost for adjusting in the bid price for INLET.



INLET (PLAN VEW)



INLET (SIDE VEW)

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12TH AVENUE NORTH RECONSTRUCTION

DETAILS

INLET - STOOL TYPE GRATE

12/31/2014 11:03:12 AM Dave Wood T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\020\020GD_014_Storm-Sewer-Inlet.dwg

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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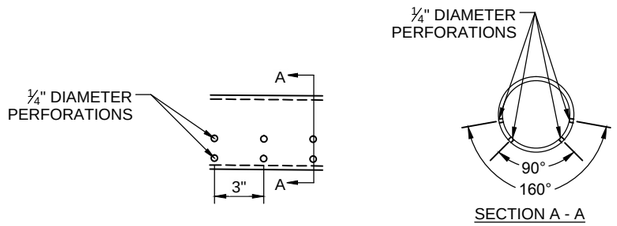
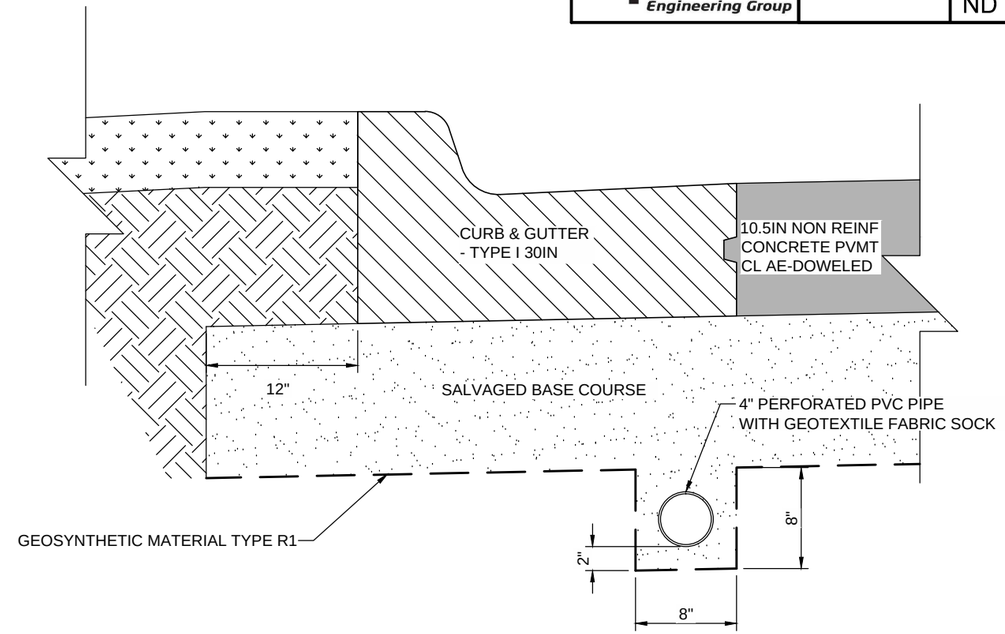


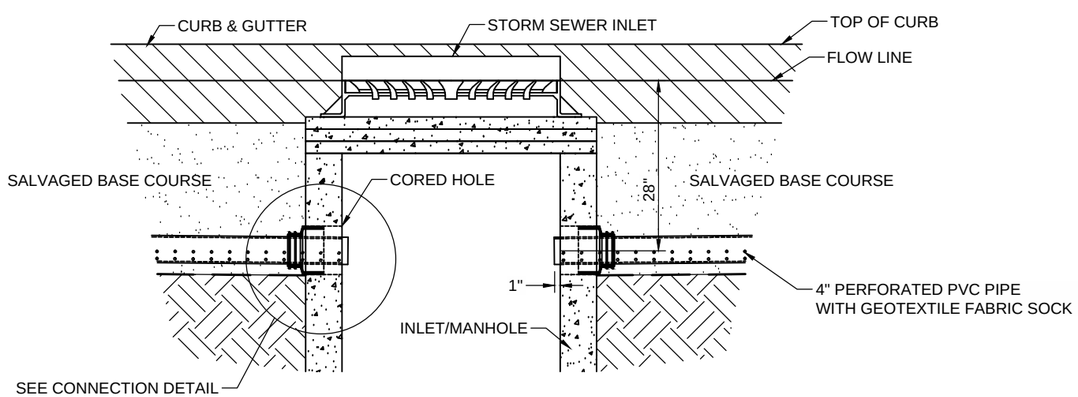
PIPE PERFORATIONS



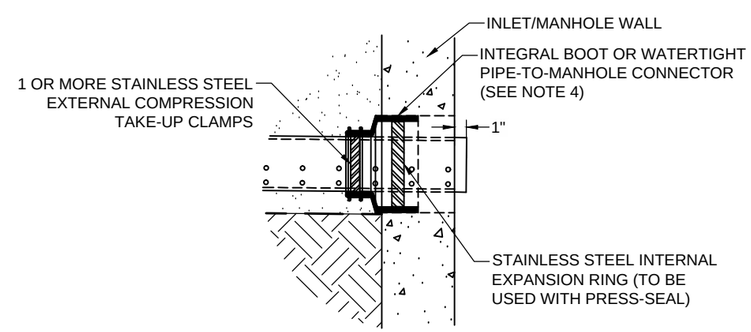
TRENCH AND PIPE PLACEMENT

Notes:

1. Use polyvinylchloride schedule 40 sewer pipe with solvent cemented joints as specified in ASTM Spec. No. F758.
2. Perforations shall be circular and 1/4" ± 1/16" in diameter. They should be arranged in 4 rows parallel to the axis of the pipe and shall be spaced approximately 3" center to center along the rows. The spigot end of the pipe shall be unperforated for a length equal to the depth of the socket. Place the rows as shown with an allowable tolerance of ±10°.
3. Molded fittings shall be in accordance with ASTM Spec No. D 2665 or F1866. Include the cost of fitting and installation in the price bid for EDGEDRAIN NON PERMEABLE BASE.
4. Use Press-Seal 8QRS PSX pipe-to-manhole connector. Inserta Tee, Link-Seal, or other connector may be used if approved.



INLET/MANHOLE CONNECTION



CONNECTION DETAIL

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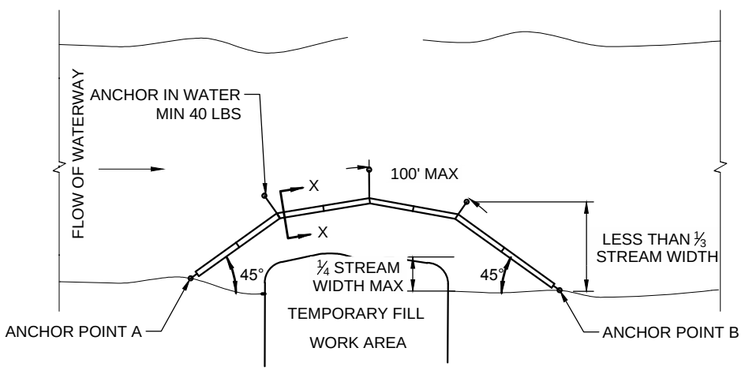
12TH AVENUE NORTH RECONSTRUCTION

DETAILS

EDGEDRAIN NON PERMEABLE BASE

12/31/2014 11:03:56 AM Dave Wood T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\020\020GD_015_Edgedrain Non Permeable Base.dwg

Apex Engineering Group	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-992(036)037	20	16



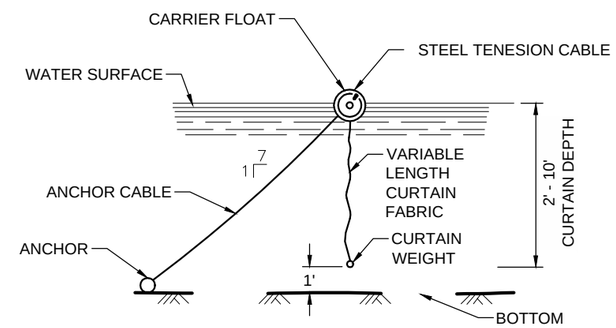
PLAN VIEW

FLOTATION SILT CURTAIN

FOR CONTAINING OVERFLOWS FROM WEIRS, STANDPIPES, SETTLING PONDS

DESIGN GUIDELINES:

WHEN TEMPORARY FILL ENCROACHES LESS THAN 1/4 OF THE WIDTH OF STREAM.
MAXIMUM WATER VELOCITY: 5 FT./SEC.
MAXIMUM WATER DEPTH: 11 FT.



SECTION X-X
FLOTATION SILT CURTAIN

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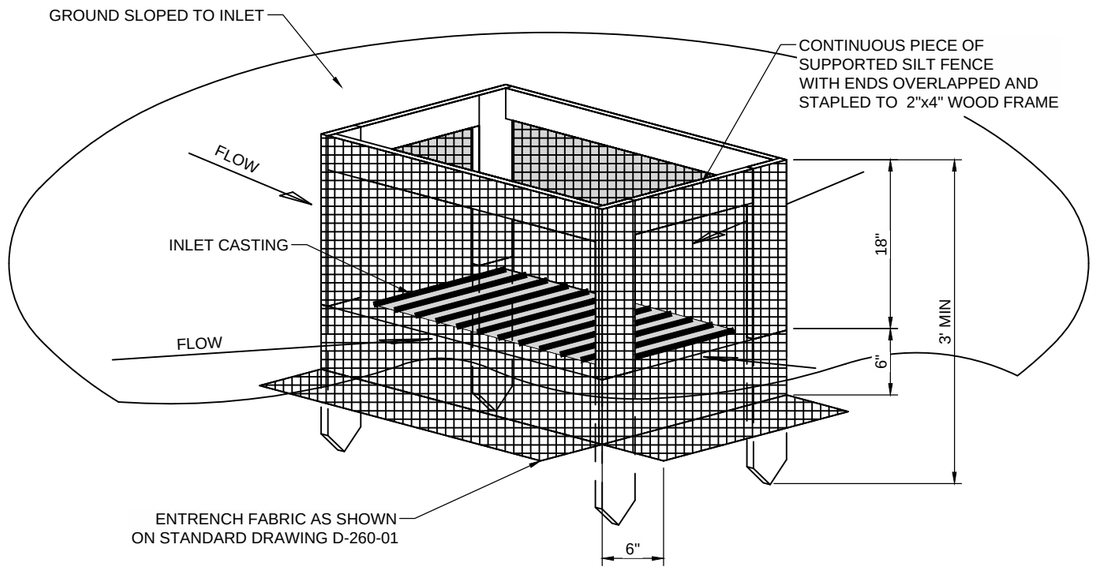
12TH AVENUE NORTH RECONSTRUCTION

DETAILS

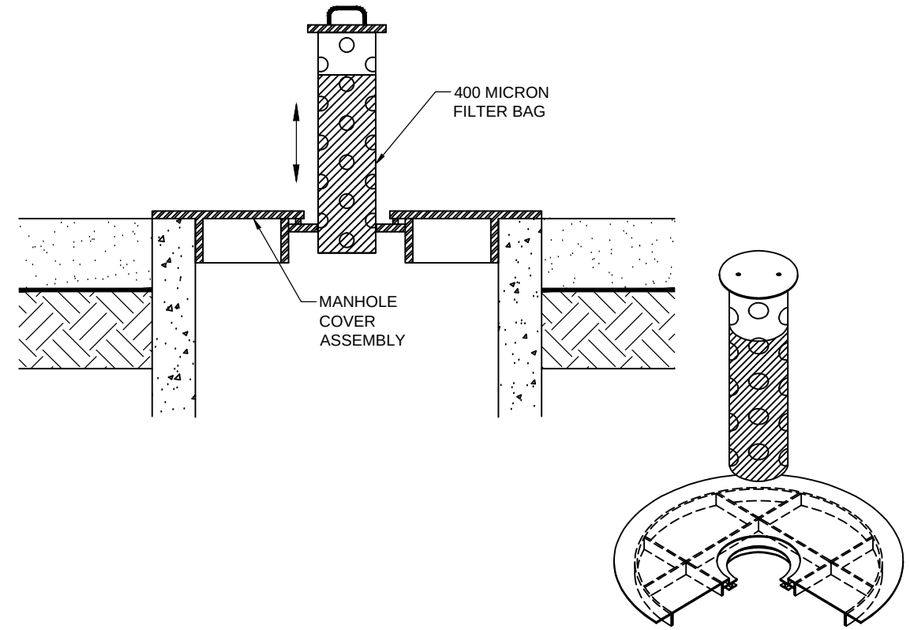
FLOTATION SILT CURTAIN

12/31/2014 11:04:44 AM Dave Wood T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\020\020GD_016_Flotation-Silt-Curtain.dwg

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	20	17



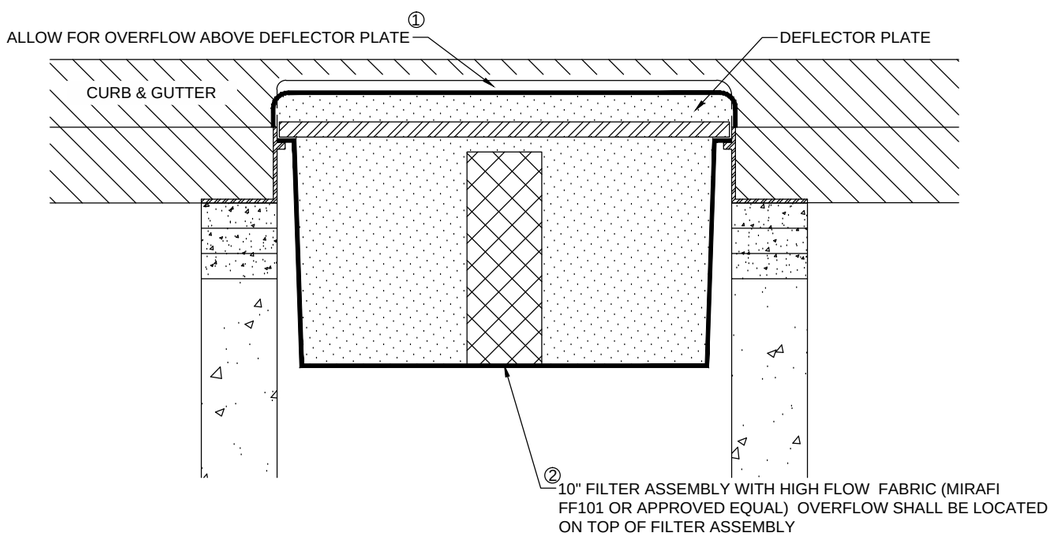
INLET PROTECTION FOR INLETS OUTSIDE OF PAVING SECTION
(TYPE A-2)

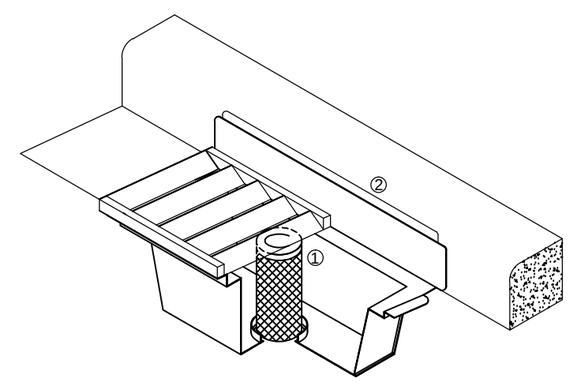


INLET PROTECTION FOR INLETS WITHIN PAVING SECTION TO BE INSTALLED BEFORE PAVING
(TYPE C)

Notes:

1. For inlets outside of the paving section use inlet protection that meets Type A-2 of the City of Fargo Standard Specifications.
2. For inlets within the paving section, use inlet protection that meets Type C of the City of Fargo Standard Specifications before paving and use Type C-2 of the City of Fargo Standard Specifications after paving
3. INLET PROTECTION-SPECIAL will be paid by the number of inlets protected and will only be paid once for each inlet protected, regardless of whether multiple types of devices are used on the inlet over the course of the project.





OVERFLOW①- CENTER OF FILTER ASSEMBLY

OVERFLOW②- TOP OF CURB BOX

INLET PROTECTION FOR INLETS WITHIN PAVING SECTION TO BE INSTALLED AFTER FINAL PAVING
(TYPE C-2)

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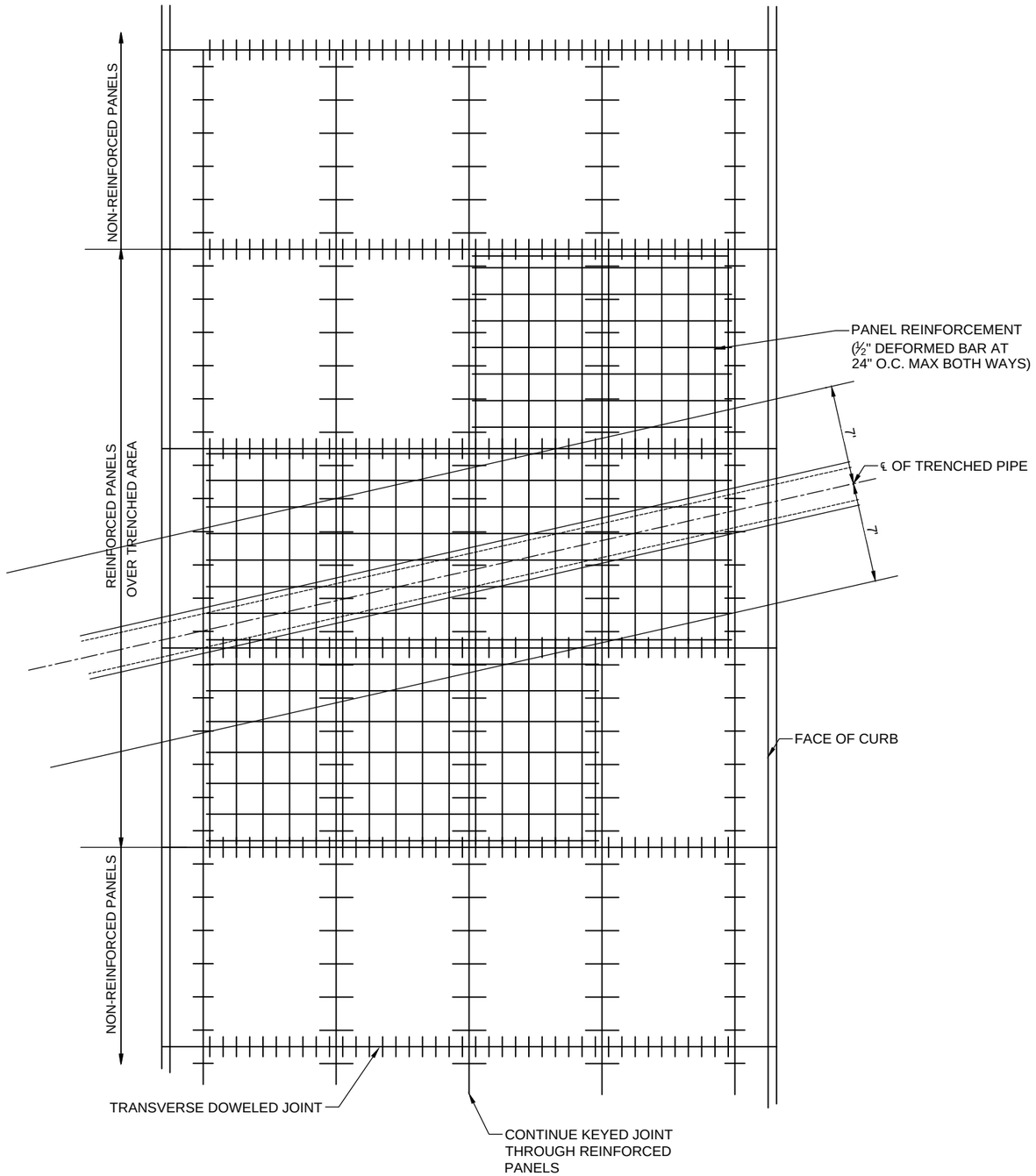
12TH AVENUE NORTH RECONSTRUCTION

DETAILS

INLET PROTECTION - SPECIAL

12/31/2014 11:05:34 AM Dave Wood T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\020\GD_017_Inlet-Protection.dwg

Apex Engineering Group	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-992(036)037	20	18



TRENCH REINFORCEMENT

Notes:

1. Areas for reinforcement will be determined by the engineer using the plan sheets in section 90 as a guideline. Include all costs to furnish and install reinforcement in the price bid for 10.5IN NON REINF CONCRETE PVMT CL AE-DOWELED.
2. Reinforce the complete panel if any part of the panel is within 7' of the pipe centerline.
3. Use chairs to support the reinforcing mat at mid-depth of the slab.
4. Stop reinforcement within 1' of the doweled contraction joint at the adjacent non-reinforced panel and within 6" of longitudinal joints.

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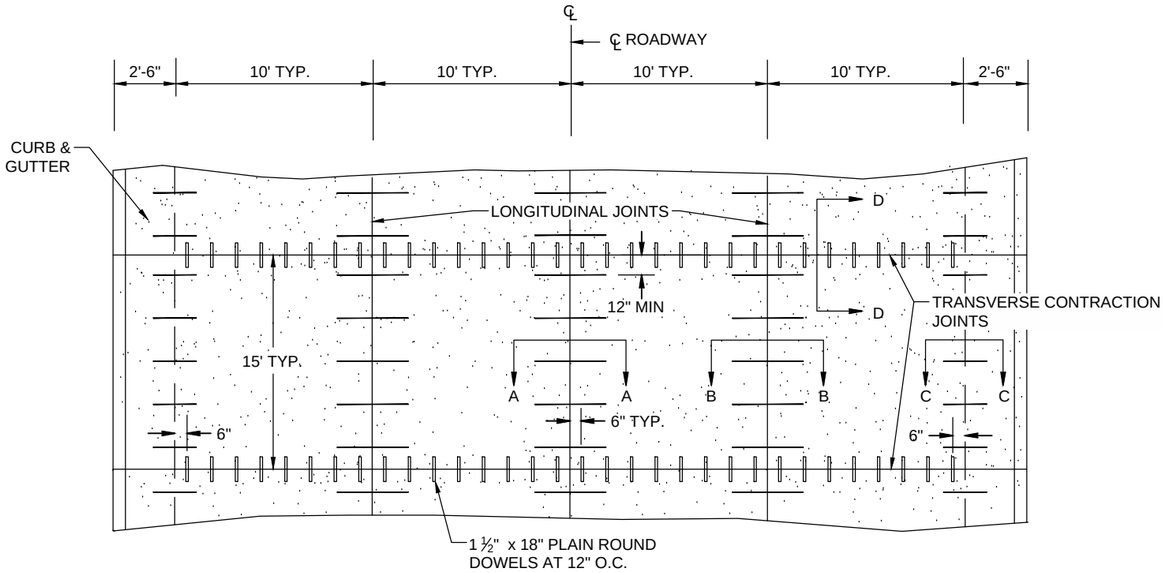
12TH AVENUE NORTH RECONSTRUCTION

DETAILS

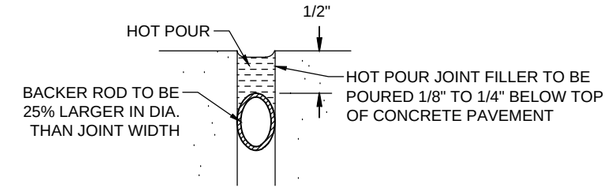
TRENCH REINFORCEMENT

12/31/2014 11:06:22 AM Dave Wood T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\020\020GD_018_Trench-Reinforcement.dwg

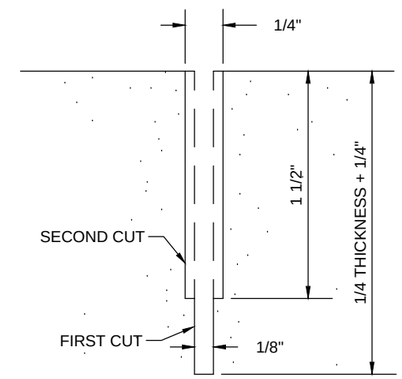
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	20	19



TYPICAL JOINT LAYOUT



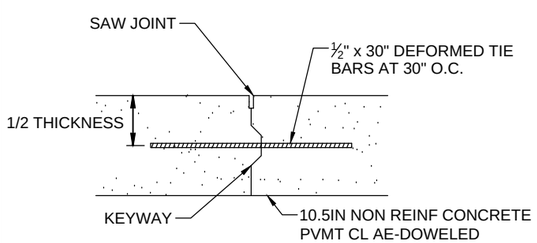
JOINT FILLER



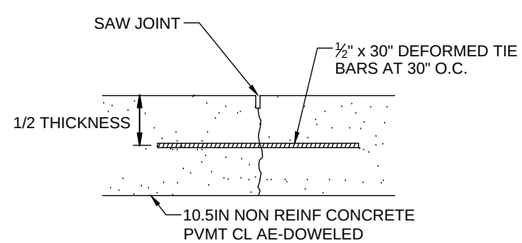
SAW JOINT

Notes:

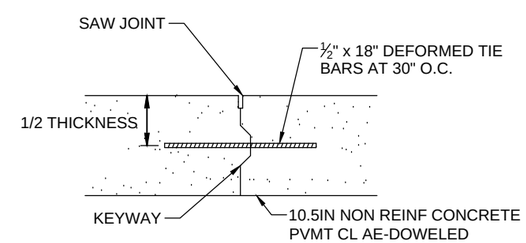
1. Tie all longitudinal joints. Tie and key all longitudinal construction joints. All tie bars shall be epoxy coated according to ASTM A775.
2. Where tie bars are installed and later straightened, use grade 40 steel.
3. The joint filler detail applies to both transverse and longitudinal joints. Fill all joints.
4. Saw joint detail - complete the first and second cuts on all contraction joints. For construction joints, only complete one cut conforming to the dimensions of the second cut shown.
5. Curb & gutter shall be poured separate and shall match thickness of the adjacent PCC pavement.



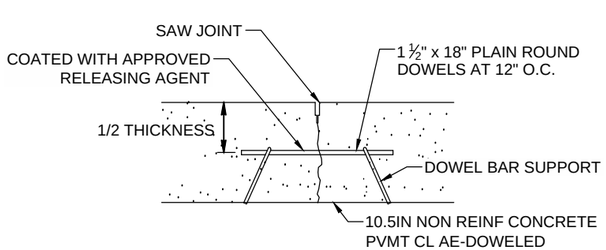
SECTION A-A
LONGITUDINAL CONSTRUCTION JOINT



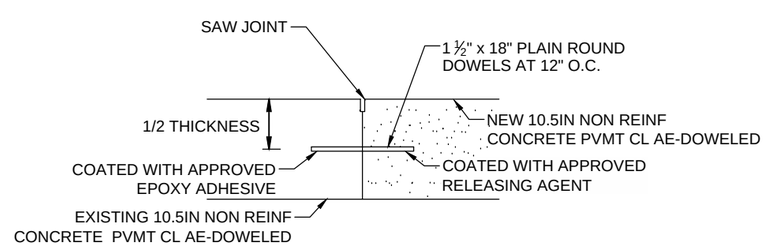
SECTION B-B
LONGITUDINAL CONTRACTION JOINT



SECTION C-C
LONGITUDINAL CONSTRUCTION JOINT



SECTION D-D
TRANSVERSE CONTRACTION JOINT



SECTION D-D
TRANSVERSE CONSTRUCTION JOINT

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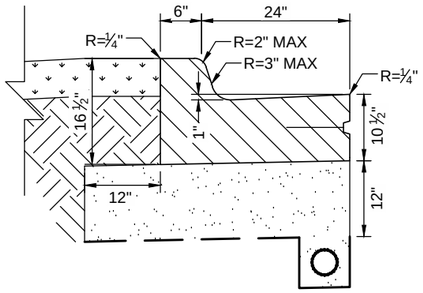
12TH AVENUE NORTH RECONSTRUCTION

DETAILS

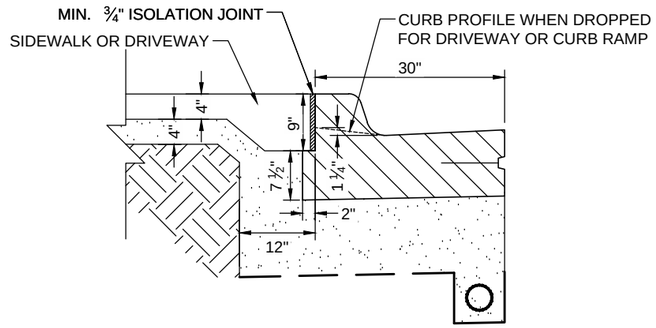
PAVEMENT JOINTING & SAWING

T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\020\020GD_019_Pvmt-Jointing-Sawing.dwg Mike Johnson 8:44:28 AM 7/21/2015

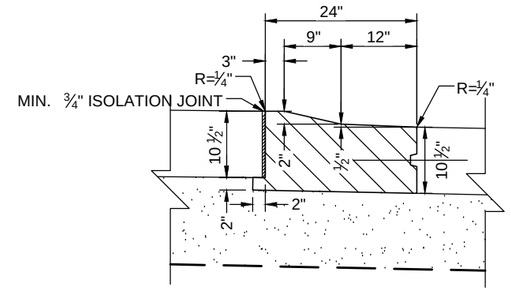
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	20	20



CURB & GUTTER - TYPE I 30IN
(SEPARATED FROM SHARED-USE PATH, SIDEWALK, OR DRIVEWAY)



CURB & GUTTER - TYPE I 30IN
ADJACENT TO SHARED-USE PATH, SIDEWALK, OR DRIVEWAY)

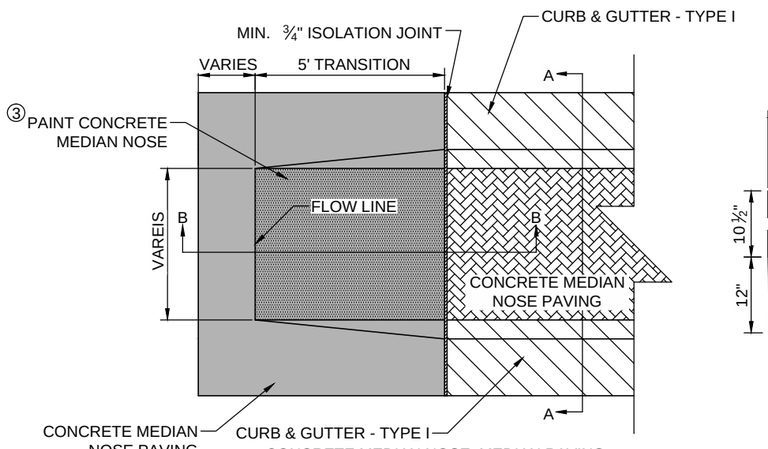


CURB & GUTTER MOUNTABLE - TYPE I

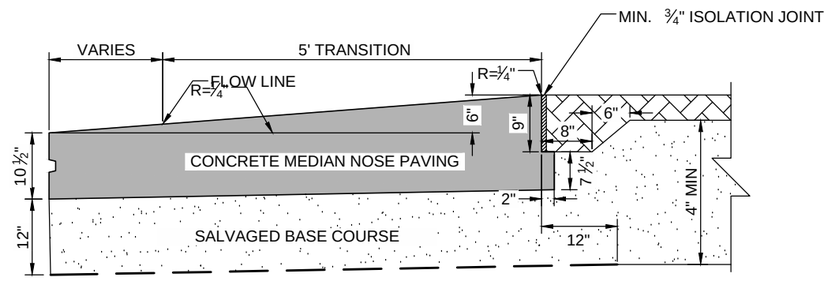
Notes:

1. Install reinforcing in curb & gutter at inlets according to standard drawing D-748-01, except use #4 x 24" transverse reinforcing bars.
2. Tie curb & gutter to PCC pavement using #4 x 30" reinforcing bars at 30" O.C.

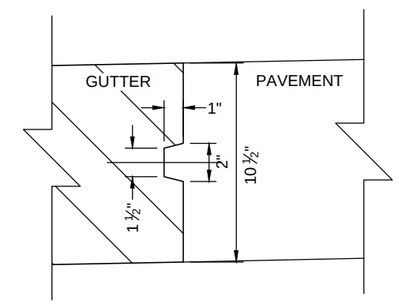
③ Clean all concrete median noses to be painted of all contamination, including oil, dirt, grease, and curing compound by sandblasting, waterblasting, or any other approved non-destructive process. Paint median noses with a minimum uniform 15 mil thick yellow epoxy. Apply glass spheres to the entire surface of the painted area. Median nose painting will be paid for by the square foot as EPOXY PVMT MK MESSAGE. If the epoxy shows signs of peeling within 1 year from the application date, reprep and repaint with epoxy.



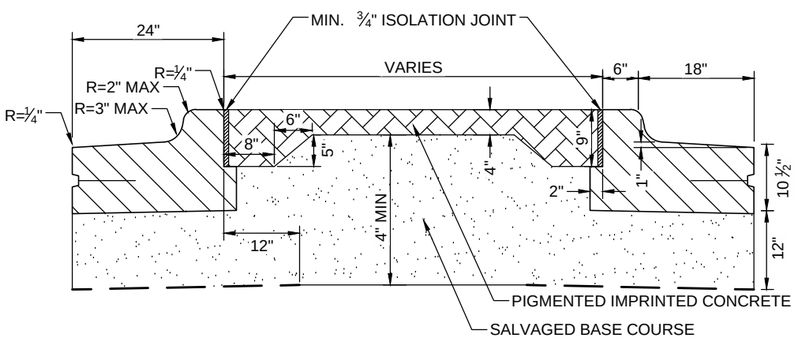
CONCRETE MEDIAN NOSE, MEDIAN PAVING
PLAN VIEW



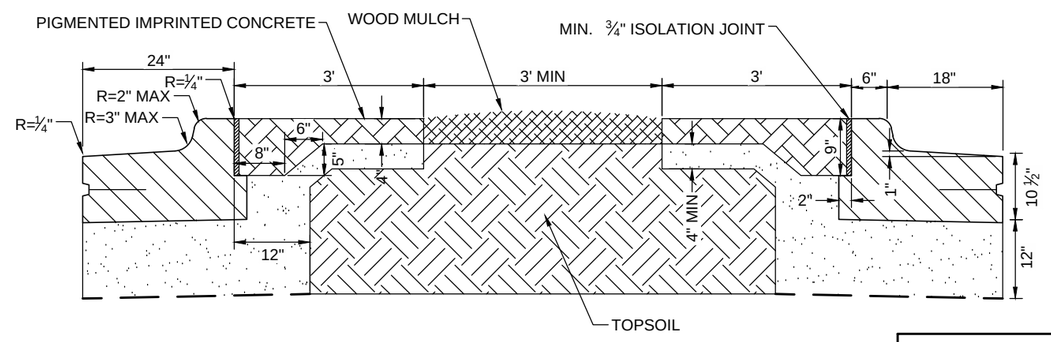
CONCRETE MEDIAN NOSE PAVING
SECTION B-B



KEYWAY



CURB & GUTTER - TYPE I, CONCRETE MEDIAN PAVING
SECTION A-A



CURB & GUTTER - TYPE I, ROUNDABOUT SPLITTER ISLAND

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12TH AVENUE NORTH RECONSTRUCTION

DETAILS

CURB & GUTTER, MEDIAN PAVING, MEDIAN NOSE

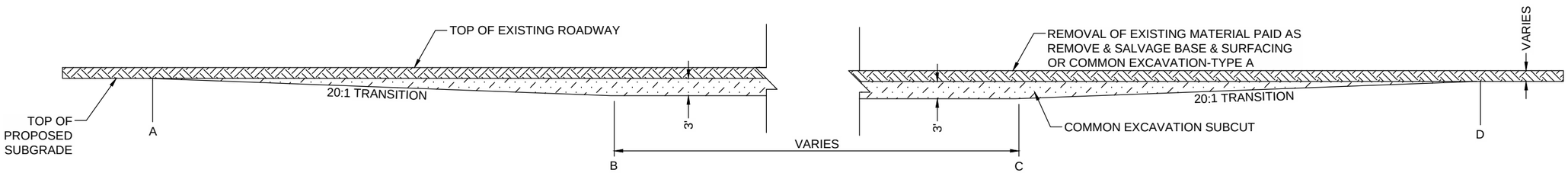
12/31/2014 11:07:58 AM Dave Wood T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\020\020GD_020_Curb&Gutter-Median.dwg

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	20	21

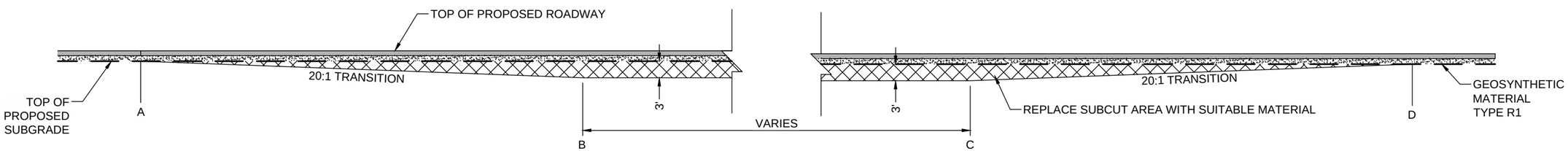
203 0138 COMMON EXCAVATION-SUBCUT			
A (STA)	B (STA)	C (STA)	D (STA)
152+40	153+00	174+00	174+60
176+90	177+50	192+00	192+60

Notes:

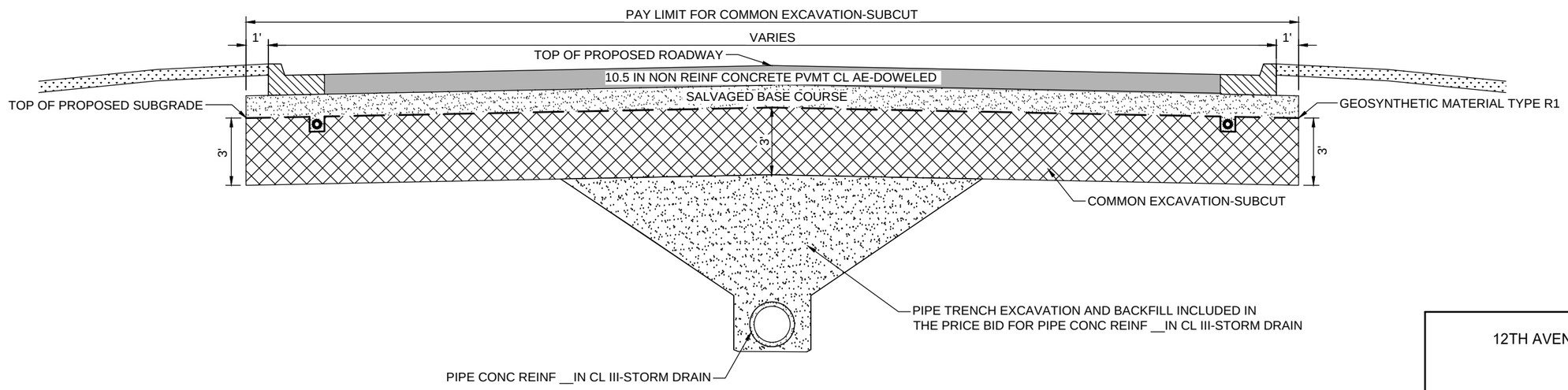
1. Material removed from the subcut area that is determined to be unsuitable by the engineer, may be used for embankment areas other than underneath the paved roadway section.
2. Scarify, dry, and recompact the subcut area to a depth of 6" prior to beginning backfilling.
3. Backfill the subcut area with suitable embankment material with compaction control, type A, in lifts not to exceed 6" of loose material.
4. Include all costs to perform the work as detailed in the price bid for COMMON EXCAVATION-SUBCUT.
5. The plan quantity shown will be used as the measurement for payment. The total plan quantity includes an additional volume of 30% to allow for shrinkage.



SUBCUT EXCAVATION - PROFILE VIEW



SUBCUT BACKFILL - PROFILE VIEW



TYPICAL CROSS SECTION

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12TH AVENUE NORTH RECONSTRUCTION

DETAILS

COMMON EXCAVATION-SUBCUT

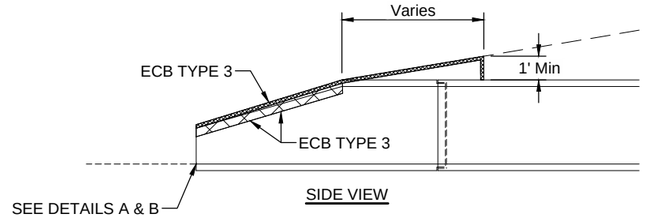
T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\020\020GD_021_ComEx-Subcut.dwg Mike Johnson 8:45:29 AM 7/21/2015

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	20	22

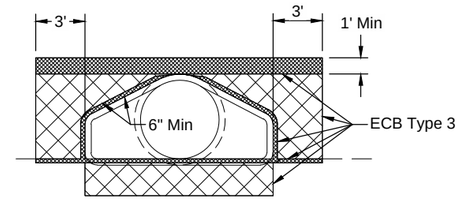
Apex Engineering Group

708 5652 ECB TYPE 3								
Location of Surface Area to be Protected				Pipe Diameter	X	Y	Unit Quantity	Total Quantity
Structure No.	Station	Offset	No.	In	Ft	Ft	SY	SY
ST-4.4	78+25	RT	1	15	9.0	20.0	20	20
ST-7.3	85+00	RT	1	15	9.0	20.0	20	20
ST-9.2	92+00	RT	1	15	9.0	20.0	20	20
ST-19.3	107+46	RT	1	24	10.5	21.6	24	24
ST-25.4	118+75	RT	1	15	9.0	20.0	20	20
ST-30.3	127+63	RT	1	15	9.0	20.0	20	20
ST-31.3	130+25	LT	1	15	9.0	20.0	20	20
ST-31.5	128+81	RT	1	15	9.0	20.0	20	20
ST-32.2	131+18	RT	1	15	9.0	20.0	20	20
ST-34.1	135+01	RT	1	21	9.5	21.0	22	22
ST-35.1	137+40	RT	1	15	9.0	20.0	20	20
ST-40.4	5+41*	RT	1	15	9.0	20.0	20	20
ST-40.8	0+98*	RT	1	15	9.0	20.0	20	20
ST-42.1	156+32	RT	1	15	9.0	20.0	20	20
ST-43.1	159+65	RT	1	15	9.0	20.0	20	20
ST-45.1	163+40	RT	1	15	9.0	20.0	20	20
ST-50.2	171+06	RT	1	15	9.0	20.0	20	20
ST-51.1	174+36	LT	1	15	9.0	20.0	20	20
ST-51.2	174+36	RT	1	15	9.0	20.0	20	20
ST-80.2	176+56	LT	1	18	9.5	20.7	22	22
ST-80.4	177+25	LT	1	12	9.0	20.0	20	20
ST-81.3	179+33	LT	1	12	9.0	20.0	20	20
ST-82.3	182+90	LT	1	12	9.0	20.0	20	20
ST-89.2	201+77	LT	1	24	10.5	21.6	24	24
ST-89.3	202+10	RT	1	24	10.5	21.6	24	24
							Total:	516

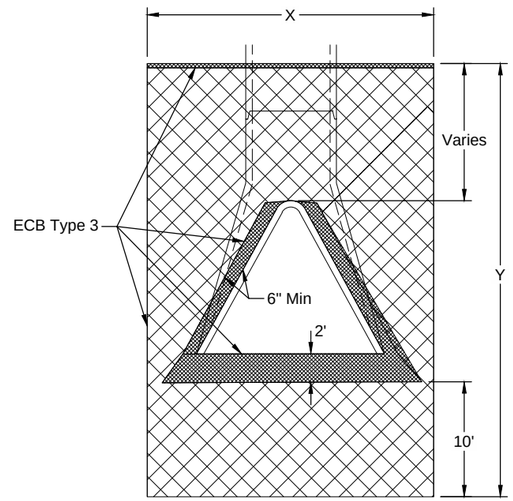
* Stationing along the alignment as shown on Section 55, Sheet 26



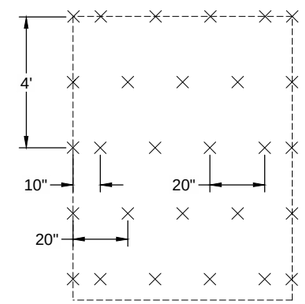
SIDE VIEW



FRONT VIEW



TOP VIEW

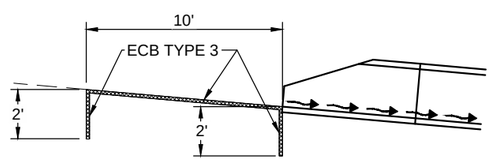


STAPLE PATTERN:

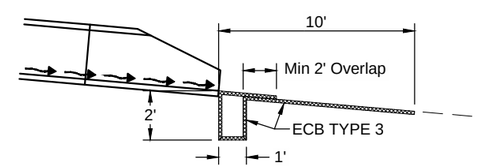
3.8 STAPLES PER SQUARE YARD USING 8-INCH 11' GAUGE WIRE "U" STAPLES

Notes:

1. Tuck the ECB a minimum of 1' into the embankment above the flared end section, a minimum of 6" into the embankment (against the flared end section) around the opening of the flared end section, and 2' into the ground at the end of the flared end section.
2. Hot-dip galvanize trash rack bars according to ASTM-A153.
3. One cross bar is required on trash racks for end sections under 60" dia. Two cross bars are required on trash racks for end sections 60" dia and larger.



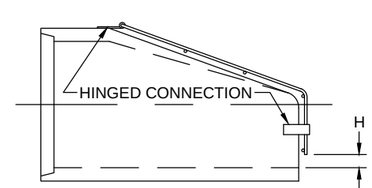
PIPE INLETS DETAIL A



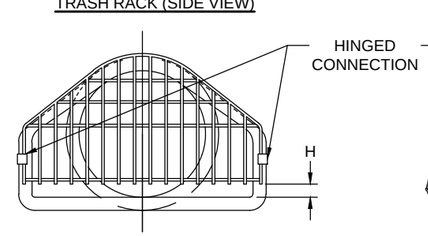
PIPE OUTLETS DETAIL B

BAR SIZES									
STANDARD DESIGN					HEAVY DESIGN				
	PIPE SIZE	HOLE DIA REQ'D	BOLT DIA	BAR SIZE		PIPE SIZE	HOLE DIA REQ'D	BOLT DIA	BAR SIZE
ROUND	12"-24"	3/4"	5/8"	5/8"	ROUND	12"-18"	3/4"	5/8"	3/4"
	27"-48"	7/8"	3/4"	3/4"		21"-42"	7/8"	3/4"	1"
	54"-90"	1 1/8"	1"	1"		48"-90"	1 1/8"	1"	1 1/4"
ARCH	22"-29"	3/4"	5/8"	5/8"	ARCH	22"	3/4"	5/8"	3/4"
	36"-59"	7/8"	3/4"	3/4"		29"-51"	7/8"	3/4"	1"
	65"-88"	1 1/8"	1"	1"		59"-88"	1 1/8"	1"	1 1/4"
BOLT LENGTH = PIPEWALL THICKNESS + 2 1/2"									

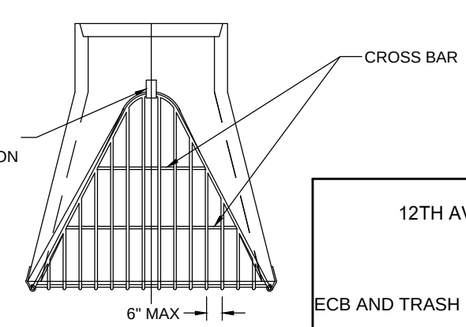
VALUES FOR "H"			
ROUND PIPE		ARCH PIPE	
PIPE SIZE	H	PIPE SIZE	H
12"	2 1/2"	22"-29"	4"
15"	3"	36"-44"	5"
18"-24"	4"	51"-55"	6"
27"-36"	5"	73"-88"	7"
42"-54"	6"		
60"-72"	7"		
78"-90"	8"		



TRASH RACK (SIDE VIEW)



TRASH RACK (FRONT VIEW)



TRASH RACK (TOP VIEW)

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12TH AVENUE NORTH RECONSTRUCTION

DETAILS

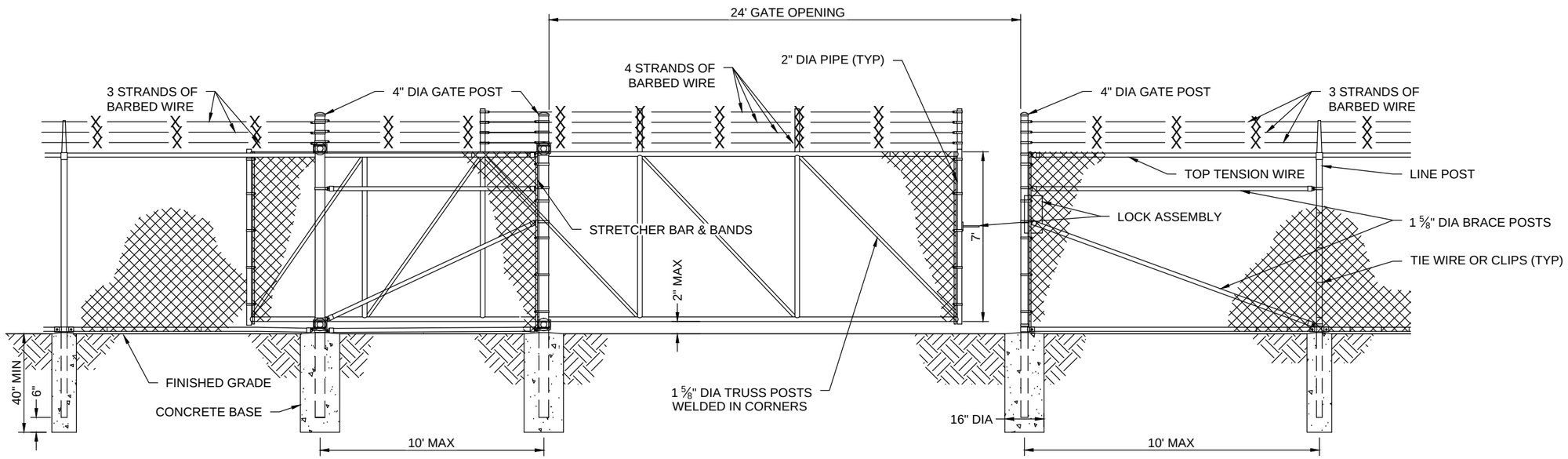
ECB AND TRASH RACKS AT CULVERT FLARED END SECTIONS

T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\020\020GD_022_ECB.dwg Mike Johnson 8:47:28 AM 7/21/2015

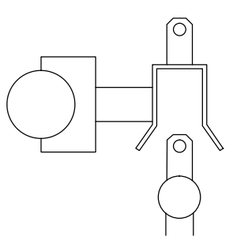
Apex Engineering Group	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-992(036)037	20	23

Notes:

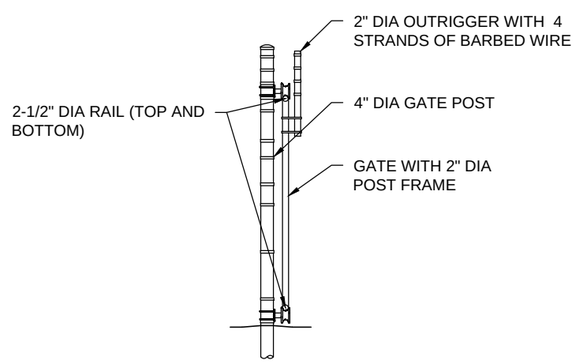
1. Use all galvanized materials except where noted.



SLIDING GATE PLAN VIEW



LATCH & LOCK ASSEMBLY (TOP VIEW)



SECTION VIEW

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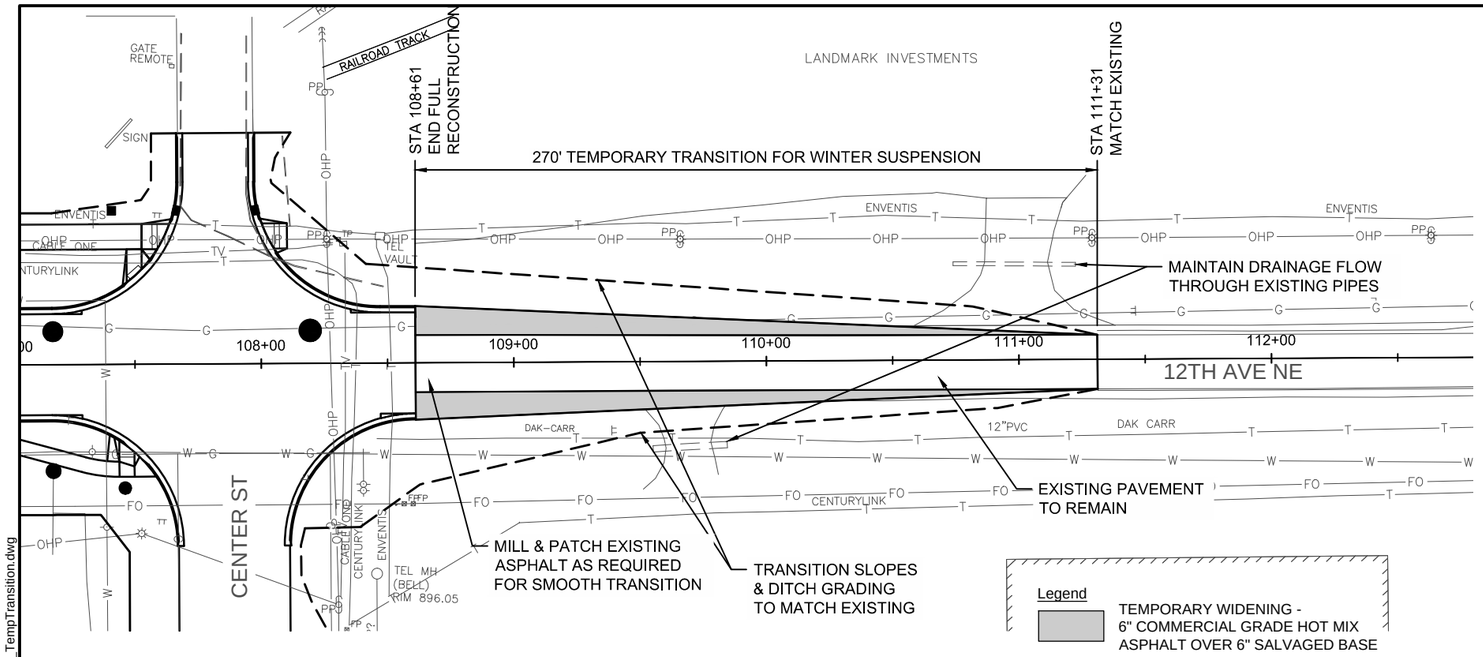
12TH AVENUE NORTH RECONSTRUCTION

DETAILS

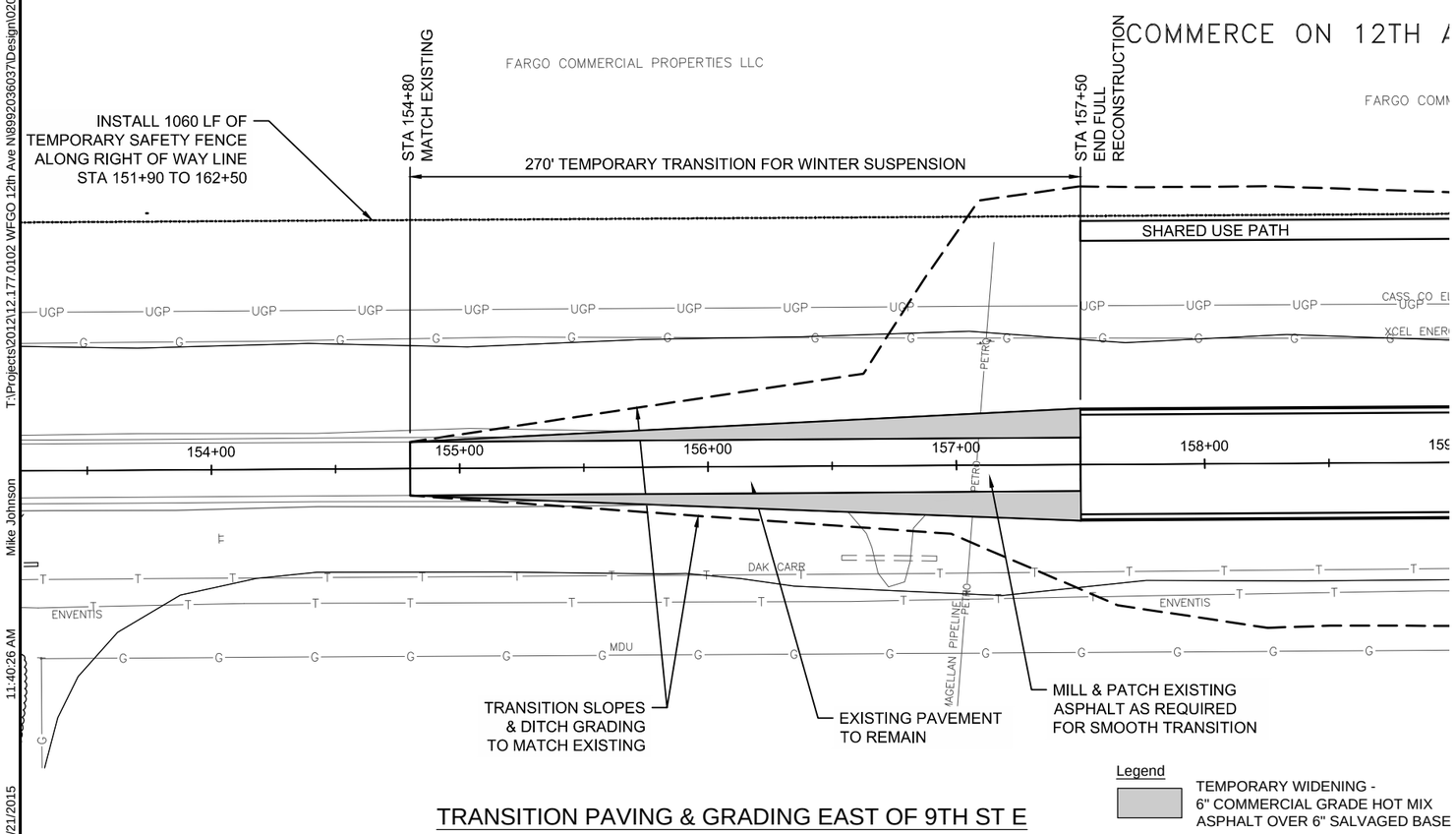
CHAIN LINK SLIDING GATE

12/31/2014 11:10:31 AM Dave Wood T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\020\020GD_023_Chain-Link-Sliding-Gate.dwg

Apex Engineering Group	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-992(036)037	20	24



TRANSITION PAVING & GRADING EAST OF CENTER ST



TRANSITION PAVING & GRADING EAST OF 9TH ST E

302 0100 SALVAGED BASE COURSE

Sta 108+61 to Sta 111+31	107 TON
Sta 154+80 to Sta 157+50	110 TON

411 0105 MILLING PAVEMENT SURFACE

Sta 108+61 to Sta 108+86 (MILL 1" TO 0")	63 SY
Sta 156+75 to Sta 157+50 (MILL 0" TO 3")	180 SY

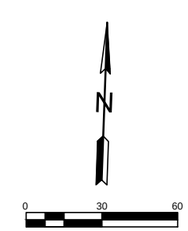
430 0500 COMMERCIAL GRADE HOT MIX ASPHALT

Sta 108+61 to Sta 111+31 (TEMPORARY WIDENING)	107 TON
Sta 108+61 to Sta 111+31 (PATCHING)	5 TON
Sta 154+80 to Sta 157+50 (TEMPORARY WIDENING)	110 TON
Sta 154+80 to Sta 157+50 (PATCHING)	5 TON

752 0911 TEMPORARY SAFETY FENCE

Sta 151+90 to 162+50	1060 LF

NOTE:
1. REFER TO DETAIL & DEVICE SUMMARY IN SECTION 100 FOR TRANSITION SIGNING, PAVEMENT MARKING, AND QUANTITIES.



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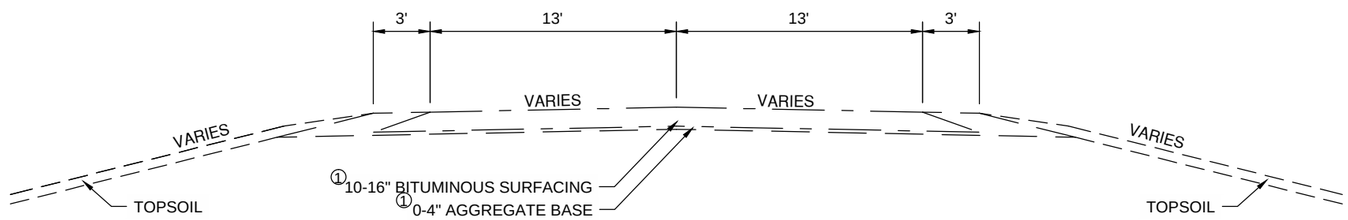
12TH AVENUE NORTH RECONSTRUCTION

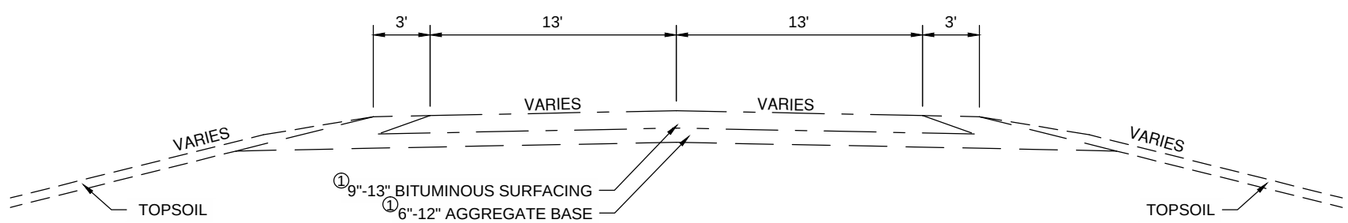
TEMPORARY TRANSITIONS FOR WINTER SUSPENSION

T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\020\020GD_024_TempTransition.dwg
Mike Johnson
11:40:26 AM
7/21/2015

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	30	1



EXISTING TYPICAL SECTION - 12TH AVE N
STA 73+00.36 TO STA 75+80.00
STA 98+00.00 TO STA 150+00.00



EXISTING TYPICAL SECTION - 12TH AVE N
STA 75+80.00 TO STA 98+00.00
STA 150+00.00 TO STA 202+12.42

Notes:

① Thickness based on existing boring data, as shown in the table below.

2. Based on boring analysis, the aggregate base material on 12th Ave from Sta 63+88 to Sta 150+00 is assumed to be unsalvagable. No existing aggregate base has been included in the salvaged base course calculations for this station range.

BORING #	BORING LOCATION (STA)	BITUMINOUS THICKNESS (IN)	AGGREGATE THICKNESS (IN)
ST-01	63+88	12	4
ST-02	72+00	10	0
ST-03	79+60	13	10
ST-04	88+00	12	11
ST-05	108+00	16	0
ST-06	123+00	12	0
ST-07	124+00	16	0
ST-08	130+50	10	0
ST-09	140+00	10	2
ST-10	151+00	12	12
ST-11	162+00	10	6
ST-12	173+00	12	10
ST-13	182+00	9	10
ST-14	191+00	12	6
ST-15	200+00	11	6

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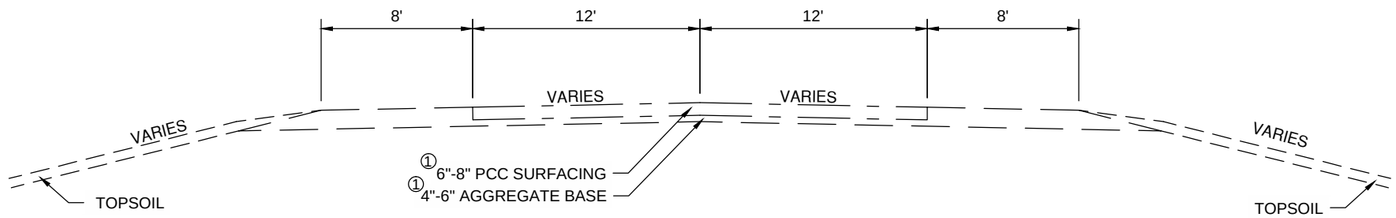
12TH AVENUE NORTH RECONSTRUCTION

TYPICAL SECTIONS

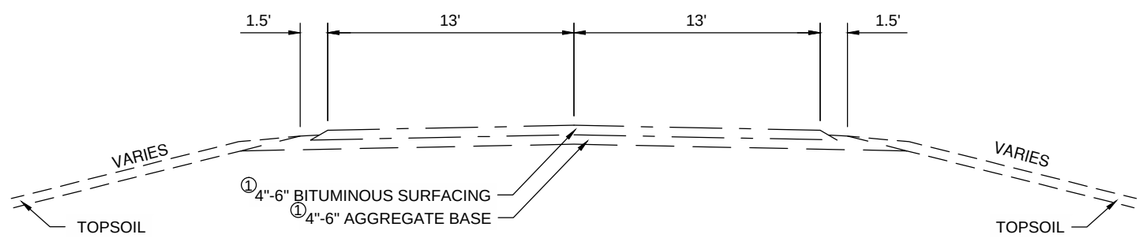
EXISTING

7/21/2015 8:49:43 AM Mike Johnson T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\030\030TP_Typical Sections.dwg

Apex Engineering Group	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-992(036)037	30	2



EXISTING TYPICAL SECTION - CASS CO RD 17
STA 2+23.90 TO STA 11+00.00
(BASED ON CASS CO RD 17 ALIGNMENT)

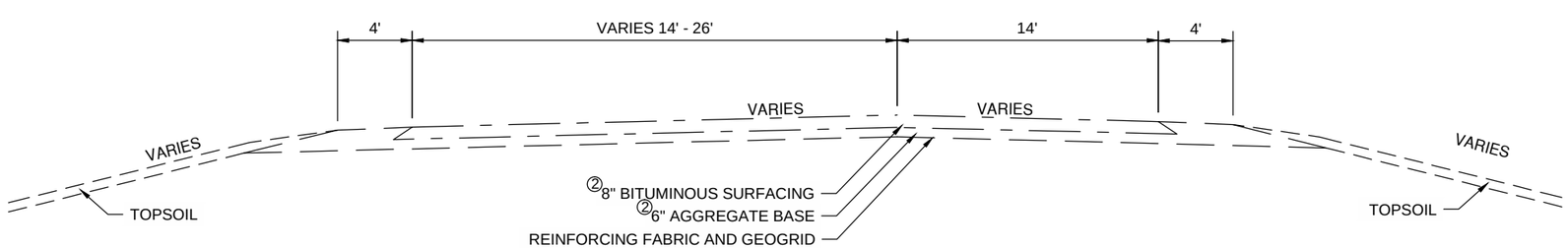


EXISTING TYPICAL SECTION - 9TH ST NE
STA 447+32.06 TO STA 450+00.00
(BASED ON 9TH ST ALIGNMENT)

Notes:

① Assumed thickness. No boring information or old plans were available at the time this information was prepared.

② Thickness based on available old plans.



EXISTING TYPICAL SECTION - 9TH ST NE
STA 450+00.00 TO STA 454+86.50
(BASED ON 9TH ST ALIGNMENT)

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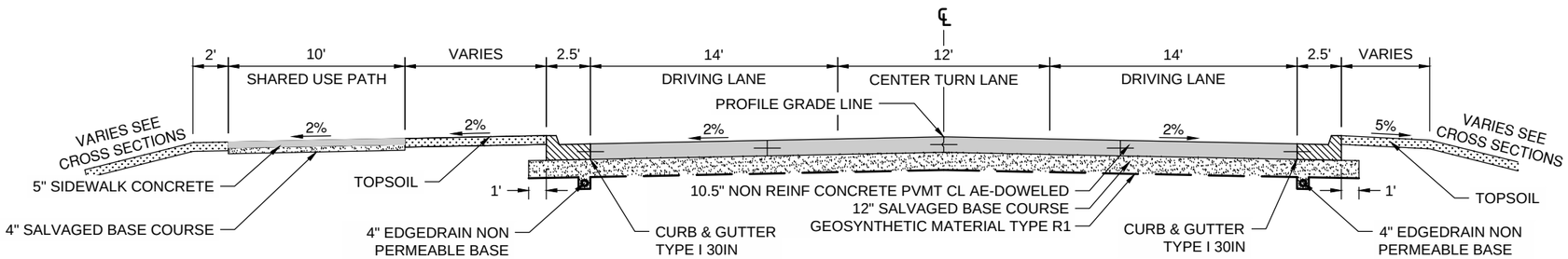
12TH AVENUE NORTH RECONSTRUCTION

TYPICAL SECTIONS

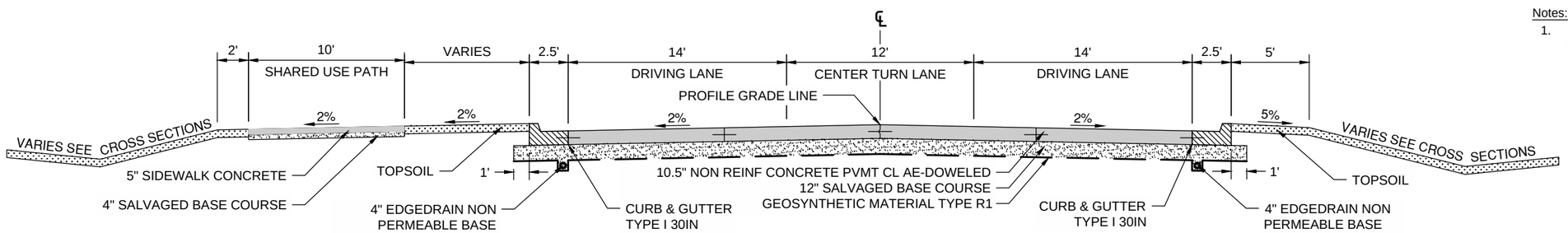
EXISTING

12/31/2014 11:12:29 AM Dave Wood T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\030\030TP_Typical Sections.dwg

Apex Engineering Group	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-992(036)037	30	3



PROPOSED TYPICAL SECTION 2 - 12TH AVE N
STA 73+00.36 TO STA 89+57.66



PROPOSED TYPICAL SECTION 3 - 12TH AVE N
STA 89+57.66 TO STA 92+83.41

Notes:

1. Proposed Typical 1 was removed from this project and therefore is not shown.

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12TH AVENUE NORTH RECONSTRUCTION

TYPICAL SECTIONS

PROPOSED

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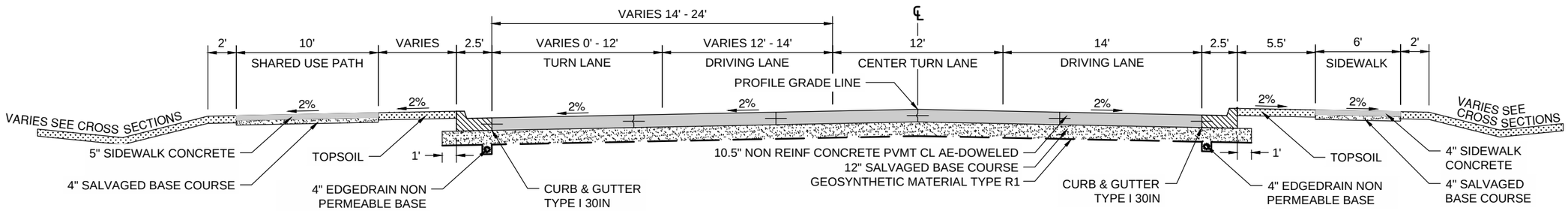
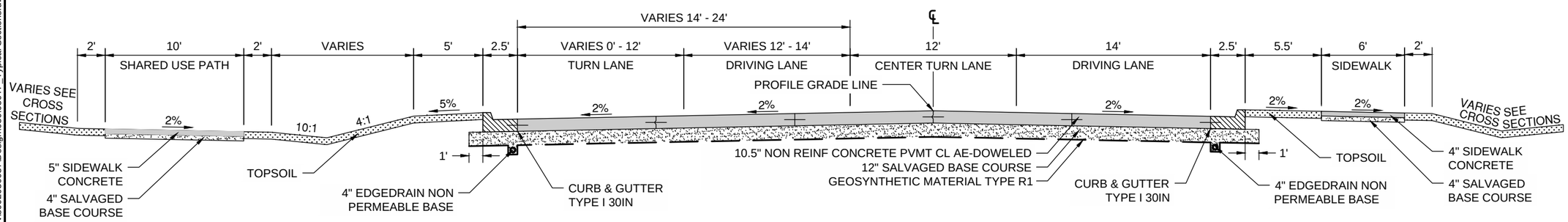
Apex Engineering Group	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-992(036)037	30	4



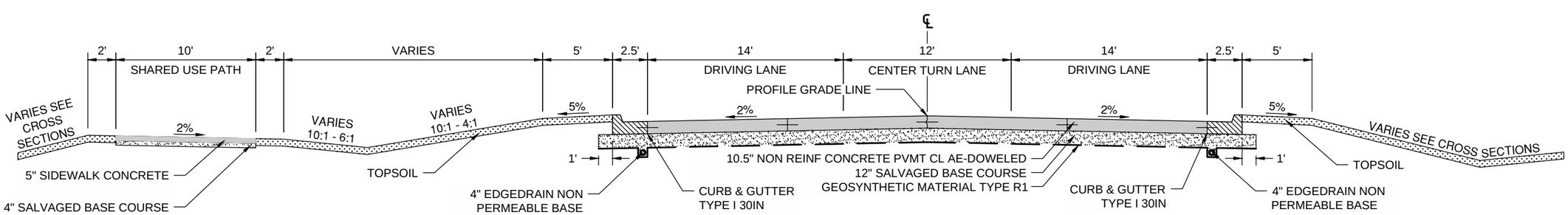
PROPOSED TYPICAL SECTION 4 - 12TH AVE N
STA 92+83.41 TO STA 95+93.06
STA 101+10.46 TO STA 104+25.00

Note:
1. Westbound right turn lane taper from Sta 103+68.46 to Sta 104+88.46



PROPOSED TYPICAL SECTION 5 - 12TH AVE N
STA 95+93.06 TO STA 101+10.46
STA 104+25.00 TO STA 107+89.08

Note:
1. Westbound right turn lane taper from Sta 98+98.57 to Sta 100+15.57



PROPOSED TYPICAL SECTION 6 - 12TH AVE N
STA 107+89.08 TO STA 119+27.44
STA 137+79.39 TO STA 146+72.80

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12TH AVENUE NORTH RECONSTRUCTION

TYPICAL SECTIONS

PROPOSED

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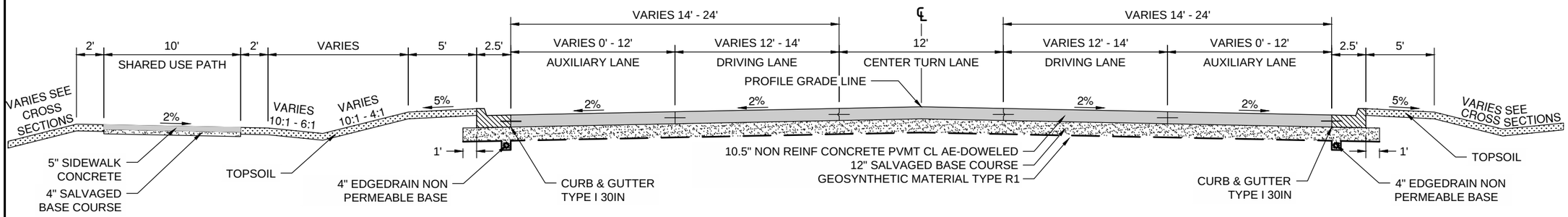
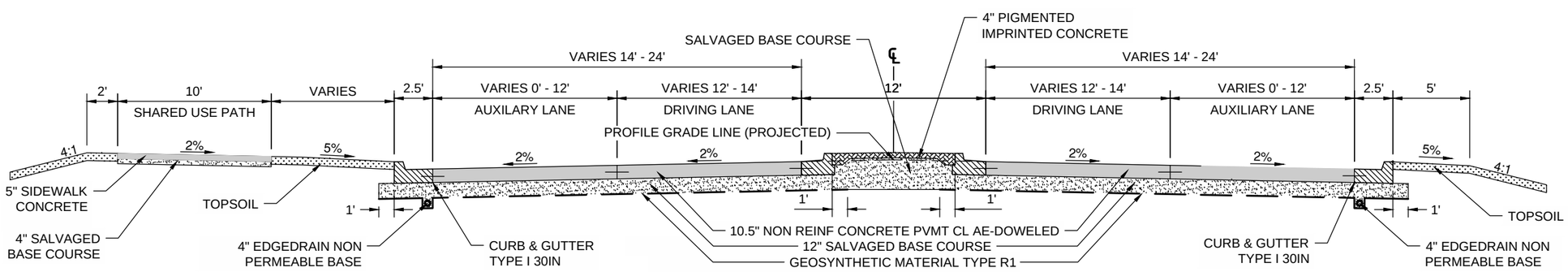
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	30	5



PROPOSED TYPICAL SECTION 7 - 12TH AVE N
STA 119+27.44 TO STA 121+92.97
STA 131+75.00 TO STA 137+79.39

Notes:

1. Westbound acceleration taper from Sta 118+92.97 to Sta 121+92.97
2. Westbound deceleration taper from Sta 130+99.28 to Sta 132+19.28
3. Eastbound acceleration taper from Sta 134+73.39 to Sta 137+79.39



PROPOSED TYPICAL SECTION 8 - 12TH AVE N
STA 121+92.97 TO STA 131+75.00

Notes:

1. Eastbound deceleration taper from Sta 124+95.25 to Sta 126+15.25
2. West concrete median from Sta 127+05.25 to Sta 128+25.25
3. East concrete median from Sta 128+89.28 to Sta 132+19.28
4. Westbound deceleration taper Sta 130+99.28 to Sta 132+19.28

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12TH AVENUE NORTH RECONSTRUCTION

TYPICAL SECTIONS

PROPOSED

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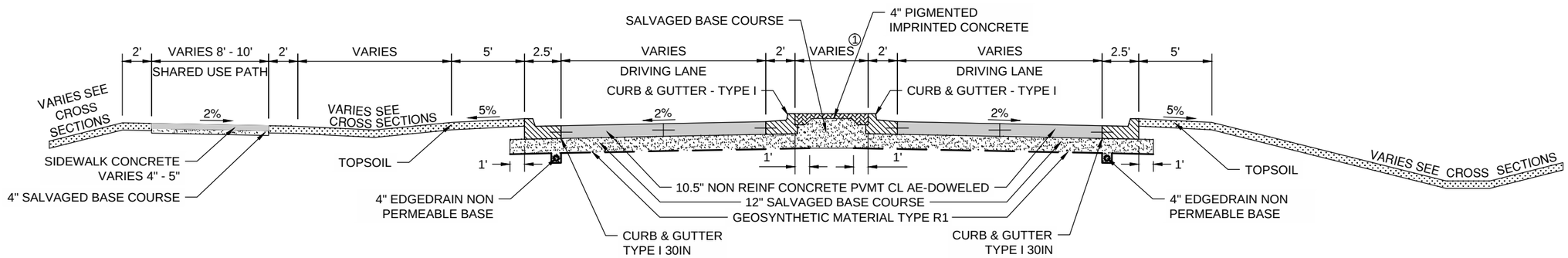
Apex Engineering Group	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-992(036)037	30	6



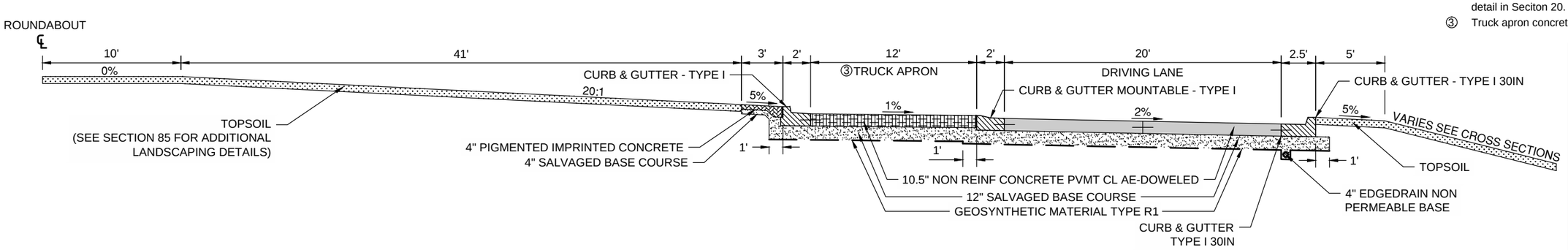
PROPOSED TYPICAL SECTION 9 - ROUNDABOUT SPLITTER ISLANDS
STA 146+72.80 TO 149+34.94
②STA 151+14.94 TO 153+75.02

Notes:

① 3 foot wide pigmented imprinted concrete section to be placed behind curb in areas where the splitter island widens as shown in section 60.

② COMMON EXCAVATION-SUBCUT from Sta 153+00.00 to Sta 174+00.00 and from Sta 177+00.00 to Sta 192+00.00. See detail in Seciton 20.

③ Truck apron concrete will be pigmented. See note in section 6.



PROPOSED TYPICAL SECTION 10 - ROUNDABOUT ISLAND/TRUCK APRON HALF SECTION
STA 149+34.95 TO STA 151+14.93

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12TH AVENUE NORTH RECONSTRUCTION

TYPICAL SECTIONS

PROPOSED

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Apex Engineering Group	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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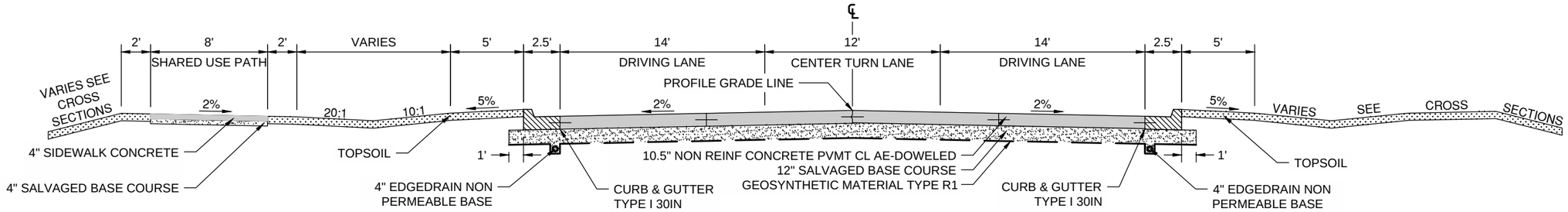
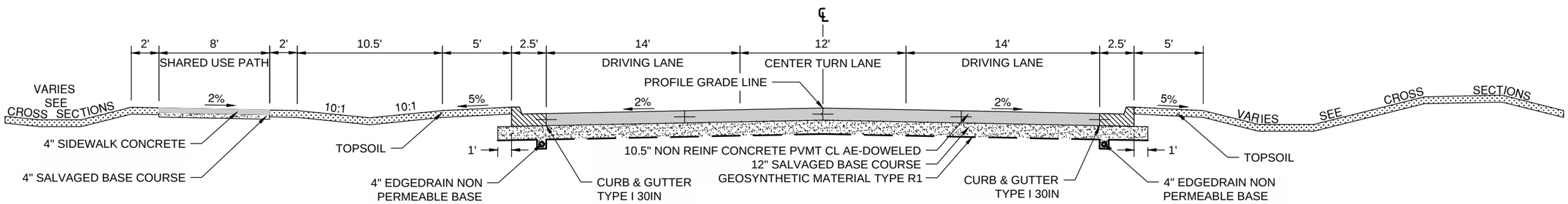


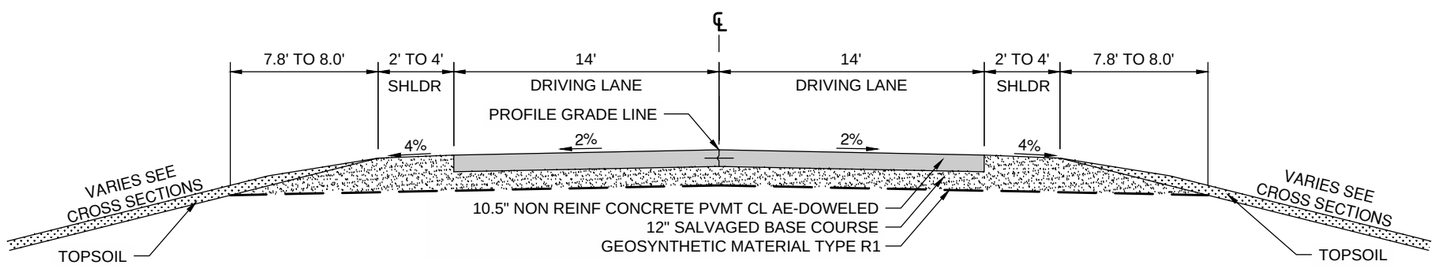
PROPOSED TYPICAL SECTION 11 - 12TH AVE N
①②STA 153.75+02 TO STA 175+17.53



PROPOSED TYPICAL SECTION 12 - 12TH AVE N
①② STA 175+17.54 TO STA 202+12.17

Notes:
1. Eastbound right turn lane taper from Sta 198+00.00 to Sa 200+00.00
2. Southbound right turn flare from Sta 200+00.00 to Sta 202+11.71

Notes:
① COMMON EXCAVATION-SUBCUT from Sta 153+00.00 to Sta 174+00.00 and from Sta 177+00.00 to Sta 192+00.00. See detail in Seciton 20.
② SUBGRADE PREPARATION-TYPE A-6IN from Sta 174+00.00 to Sta 177+50.00



PROPOSED TYPICAL SECTION 13 - 9TH ST NE
STA 447+32.06 TO STA 447+82.06
STA 452+25.88 to STA 454+86.50

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12TH AVENUE NORTH RECONSTRUCTION

TYPICAL SECTIONS

PROPOSED

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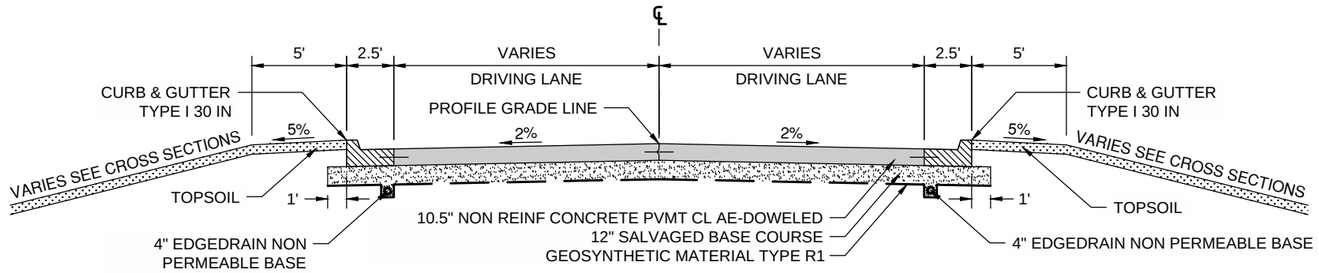
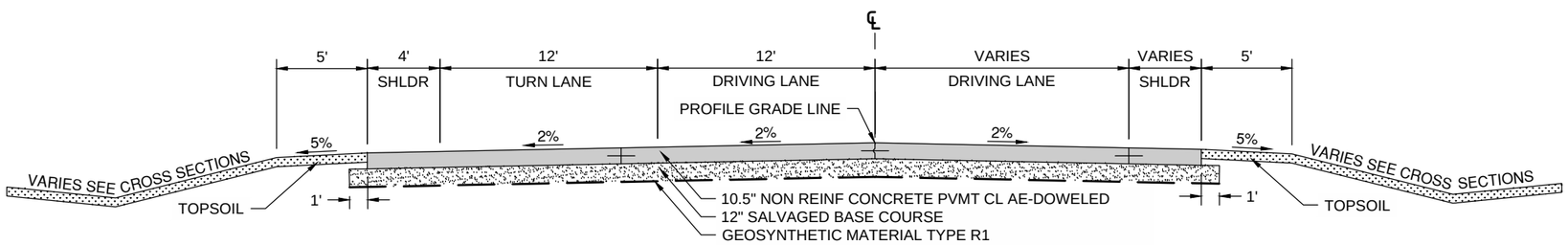
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	30	8



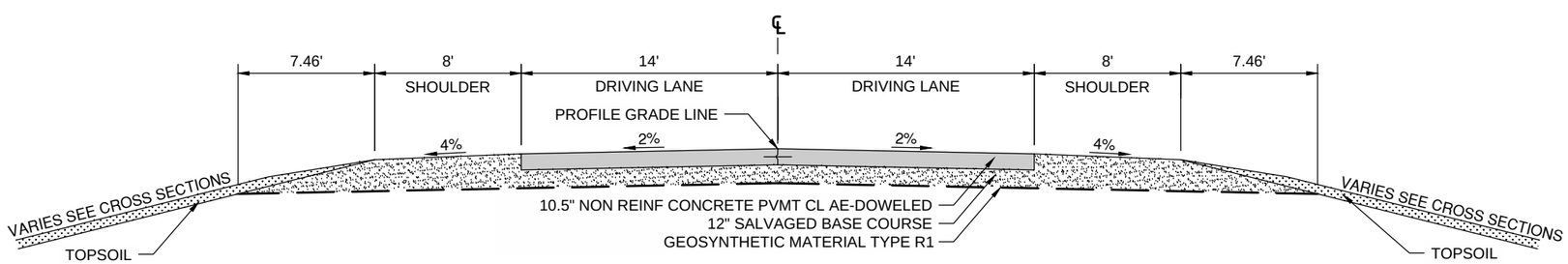
PROPOSED TYPICAL SECTION 14 - 9TH ST NE
STA 447+82.06 to STA 448+41.01
STA 451+76.32 TO STA 452+25.88



PROPOSED TYPICAL SECTION 15 - CASS COUNTY ROAD 17
STA 1+06.44 TO STA 3+05.63

Notes:

1. Southbound right turn lane taper from sta 3+05.63 to Sta 4+44.22



PROPOSED TYPICAL SECTION 16 - CASS COUNTY ROAD 17
STA 4+44.22 TO STA 11+00.00

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12TH AVENUE NORTH RECONSTRUCTION

TYPICAL SECTIONS

PROPOSED

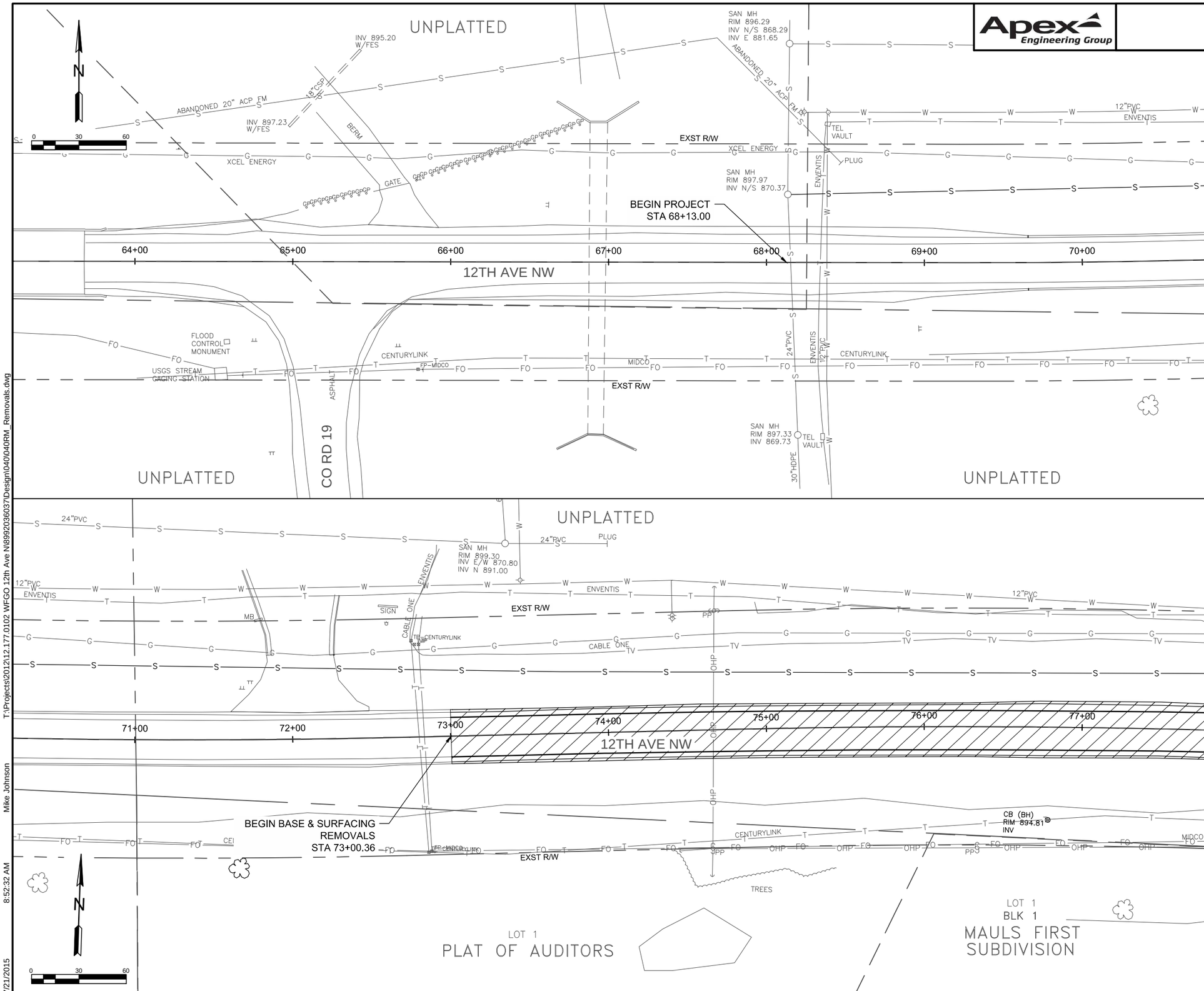
12/31/2014 11:12:59 AM Dave Wood T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\030\0030TP_Typical Sections.dwg

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	40	1

Apex Engineering Group

202 0165 REMOVE & SALVAGE BASE & SURFACING

⑤ Sta 73+00 to Sta 77+50 ℄ 1166 TON



Notes:

1. Refer to Section 55 for information and quantities of water, storm sewer, and sanitary sewer facilities to be removed or abandoned.

Legend

① 6" HBP (Base not Salvagable)
② 6" HBP 6" Aggregate
③ 8" HBP 6" Aggregate
④ 12" HBP 6" Aggregate
⑤ 13" HBP (Base not Salvagable)
⑥ 7" PCC (Base not Salvagable)
⑦ 7" PCC 6" Aggregate
⑧ Aggregate (not Salvagable)
⑨ 6" Aggregate

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12TH AVENUE NORTH RECONSTRUCTION

REMOVALS

STA 63+50 - 77+50

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Mike Johnson

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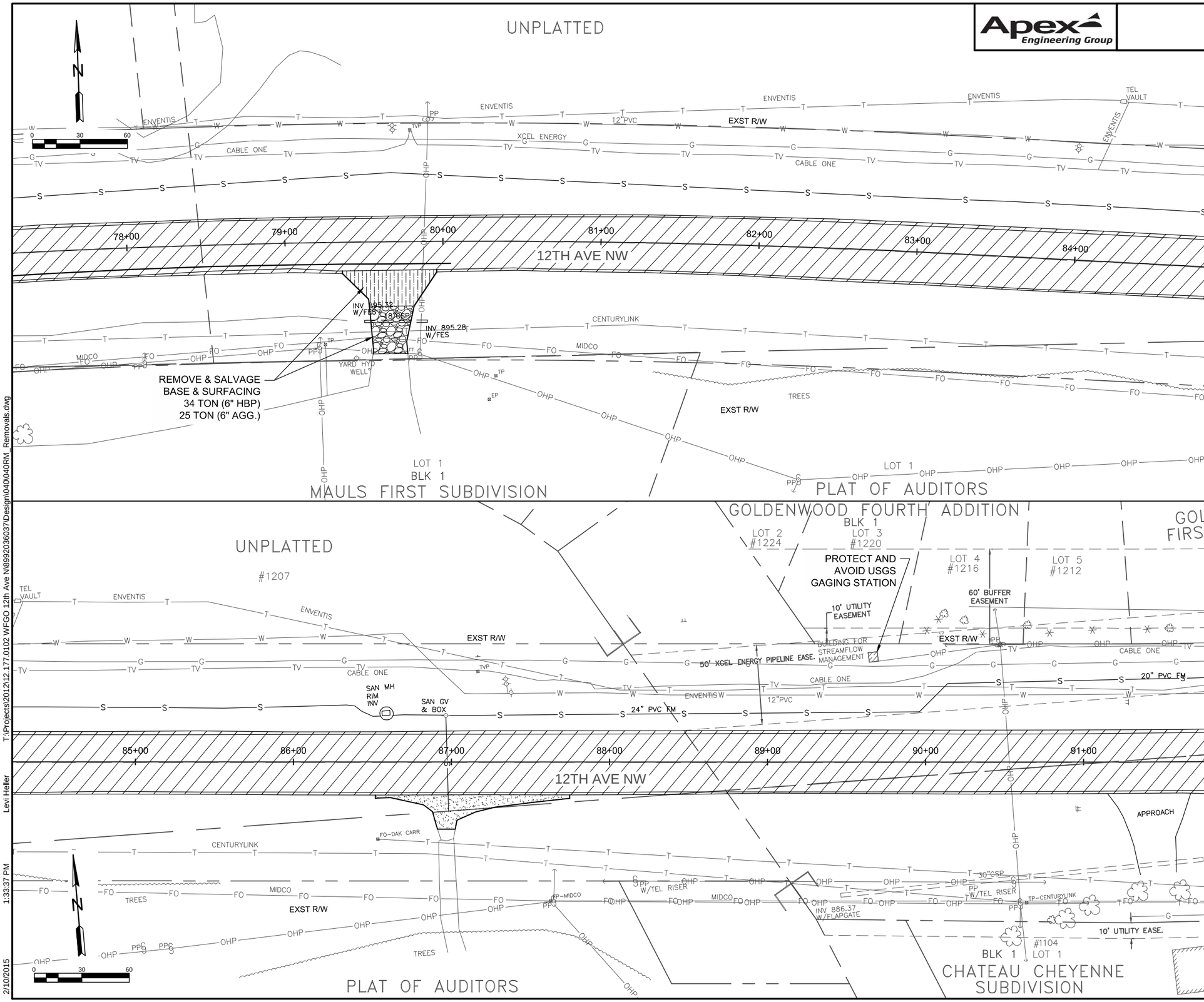
7/21/2015

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	40	2



202 0165 REMOVE & SALVAGE BASE & SURFACING

⑤	Sta 77+50 to Sta 84+50 ℄	1866 TON
①	Sta 79+75 RT	34 TON
⑨	Sta 79+75 RT	25 TON
⑤	Sta 84+50 to Sta 91+50 ℄	2023 TON
	Total	3948 TON

Notes:

1. Refer to Section 55 for information and quanitities of water, storm sewer, and sanitary sewer facilities to be removed or abandoned.

Legend

①	6" HBP (Base not Salvagable)
②	6" HBP 6" Aggregate
③	8" HBP 6" Aggregate
④	12" HBP 6" Aggregate
⑤	13" HBP (Base not Salvagable)
⑥	7" PCC (Base not Salvagable)
⑦	7" PCC 6" Aggregate
⑧	Aggregate (not Salvagable)
⑨	6" Aggregate

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12TH AVENUE NORTH RECONSTRUCTION

REMOVALS

STA 77+50 - 91+50

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Levi Heller

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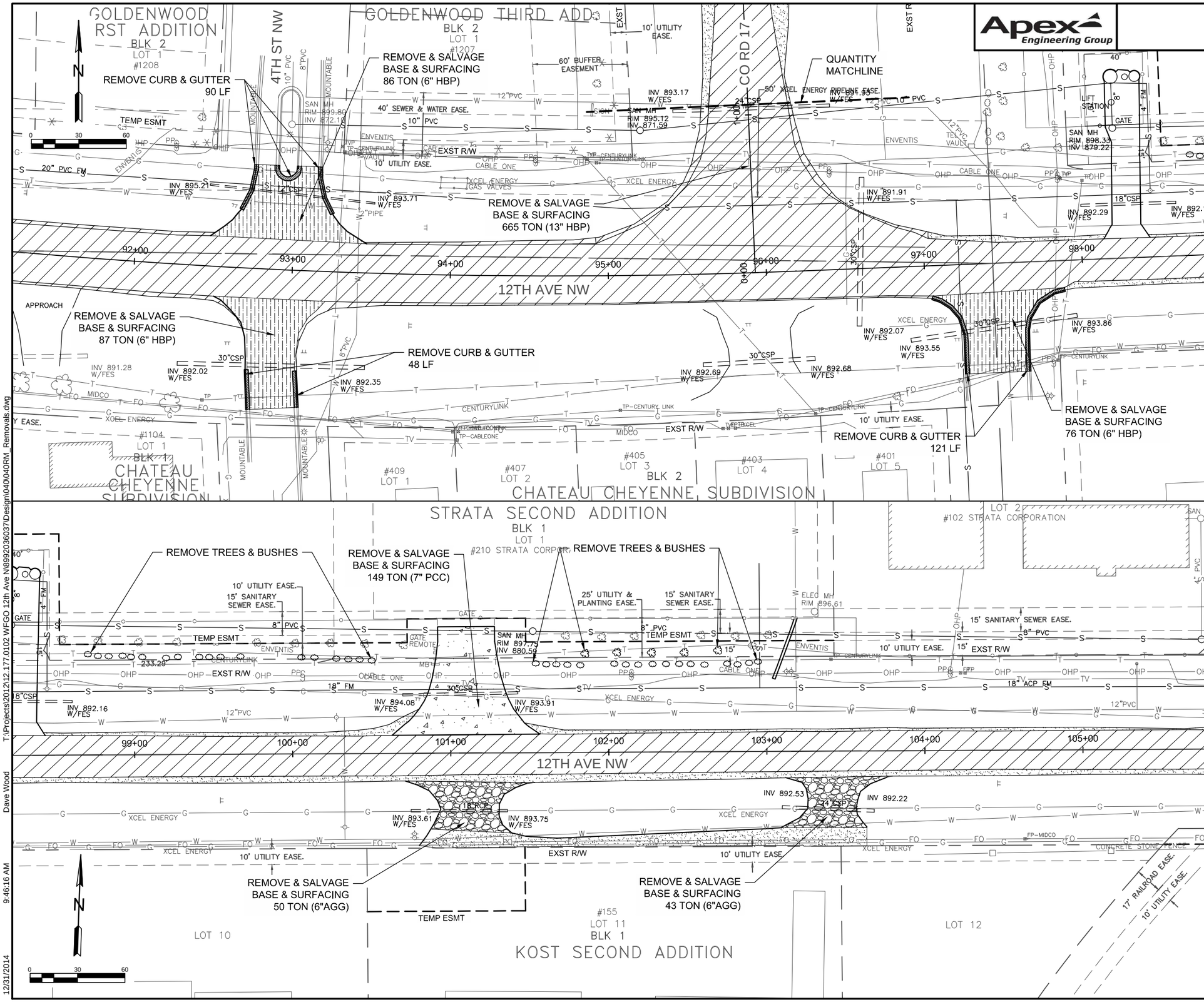
2/10/2015

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	40	3

Apex Engineering Group



202 0165 REMOVE & SALVAGE BASE & SURFACING

⑤	Sta 91+50 to Sta 98+50 ℄	1885 TON
①	Sta 93+00 LT	86 TON
①	Sta 93+00 RT	87 TON
⑤	Sta 96+00 LT	665 TON
①	Sta 97+50 RT	76 TON
⑤	Sta 98+50 to Sta 105+50 ℄	1272 TON
⑥	Sta 101+00 LT	149 TON
⑨	Sta 101+00 RT	50 TON
⑨	Sta 103+50 RT	43 TON
	Total	4313 TON

202 0130 REMOVAL OF CURB & GUTTER

Sta 93+00 LT		90 LF
Sta 93+00 RT		48 LF
Sta 97+50 RT		121 LF
	Total	259 LF

Notes:

1. Refer to Section 55 for information and quanitities of water, storm sewer, and sanitary sewer facilities to be removed or abandoned.
2. Removal quantity matchline for approach at Sta 96+00 LT (Co Rd 17) is at 106' LT. Refer to Section 40 Sheet 12 for Co Rd 17 quantities.

Legend

①	6" HBP (Base not Salvagable)
②	6" HBP 6" Aggregate
③	8" HBP 6" Aggregate
④	12" HBP 6" Aggregate
⑤	13" HBP (Base not Salvagable)
⑥	7" PCC (Base not Salvagable)
⑦	7" PCC 6" Aggregate
⑧	Aggregate (not Salvagable)
⑨	6" Aggregate

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12TH AVENUE NORTH RECONSTRUCTION

REMOVALS

STA 91+50 - 105+50

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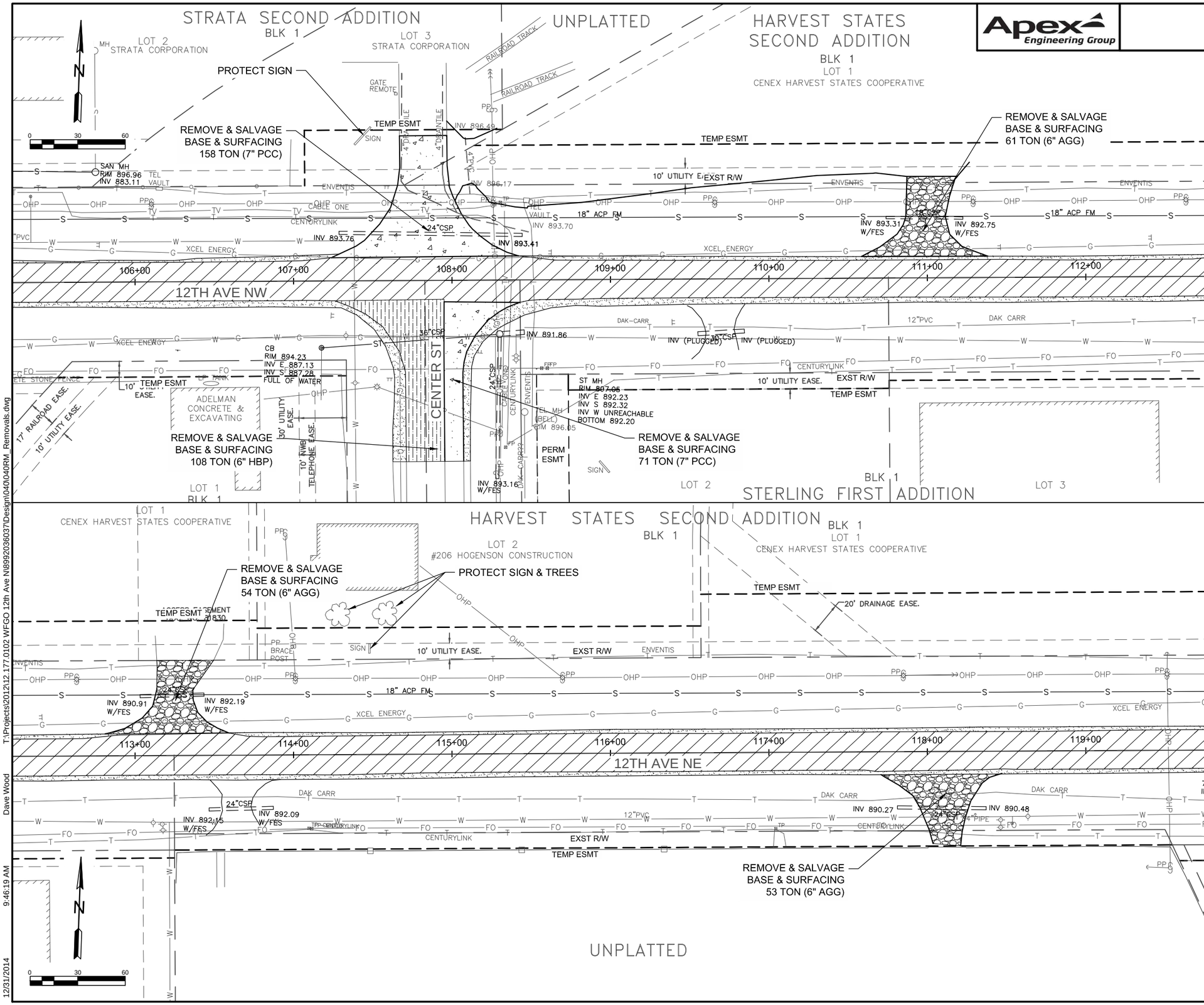
12/31/2014

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	40	4



202 0165 REMOVE & SALVAGE BASE & SURFACING

⑤	Sta 105+50 to Sta 112+50 ℄	1237 TON
⑥	Sta 107+75 LT	158 TON
①	Sta 107+75 RT	108 TON
⑥	Sta 108+00 RT	71 TON
⑨	Sta 111+00 LT	61 TON
⑤	Sta 112+50 to Sta 119+50 ℄	1199 TON
⑨	Sta 113+25 LT	54 TON
⑨	Sta 118+00 RT	53 TON
	Total	2941 TON

Notes:

1. Refer to Section 55 for information and quanitities of water, storm sewer, and sanitary sewer facilities to be removed or abandoned.

Legend

①	6" HBP (Base not Salvagable)
②	6" HBP 6" Aggregate
③	8" HBP 6" Aggregate
④	12" HBP 6" Aggregate
⑤	13" HBP (Base not Salvagable)
⑥	7" PCC (Base not Salvagable)
⑦	7" PCC 6" Aggregate
⑧	Aggregate (not Salvagable)
⑨	6" Aggregate

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12TH AVENUE NORTH RECONSTRUCTION

REMOVALS

STA 105+50 - 119+50

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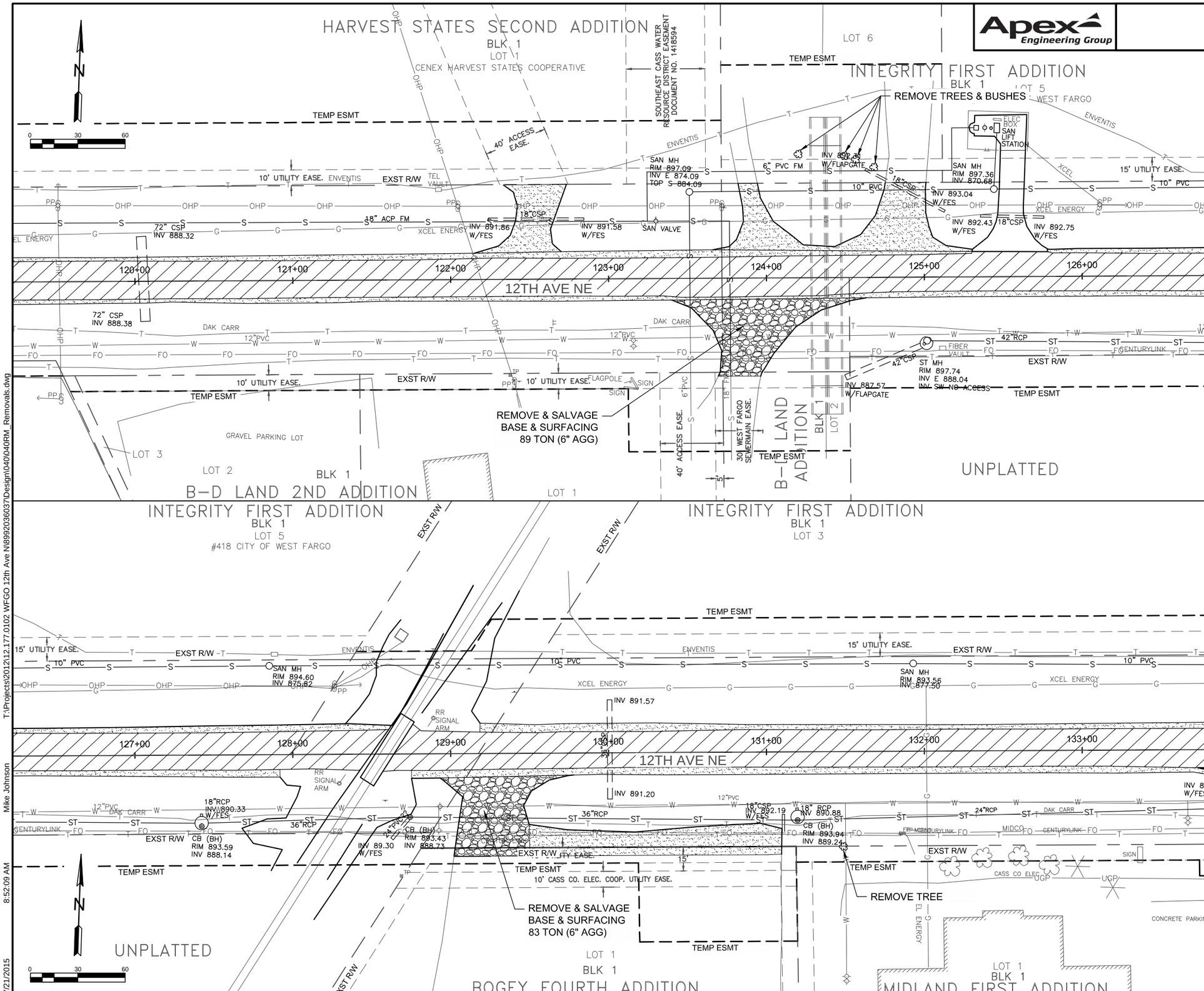
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	40	5



202 0165 REMOVE & SALVAGE BASE & SURFACING

⑤	Sta 119+50 to Sta 126+50 ℄	1200 TON
⑨	Sta 124+00 RT	89 TON
⑤	Sta 126+50 to Sta 133+50 ℄	1186 TON
⑨	Sta 129+25 RT	83 TON
	Total	2558 TON

Notes:

1. Refer to Section 55 for information and quanitities of water, storm sewer, and sanitary sewer facilities to be removed or abandoned.

Legend

①	6" HBP (Base not Salvagable)
②	6" HBP 6" Aggregate
③	8" HBP 6" Aggregate
④	12" HBP 6" Aggregate
⑤	13" HBP (Base not Salvagable)
⑥	7" PCC (Base not Salvagable)
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⑧	Aggregate (not Salvagable)
⑨	6" Aggregate

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12TH AVENUE NORTH RECONSTRUCTION

REMOVALS

STA 119+50 - 133+50

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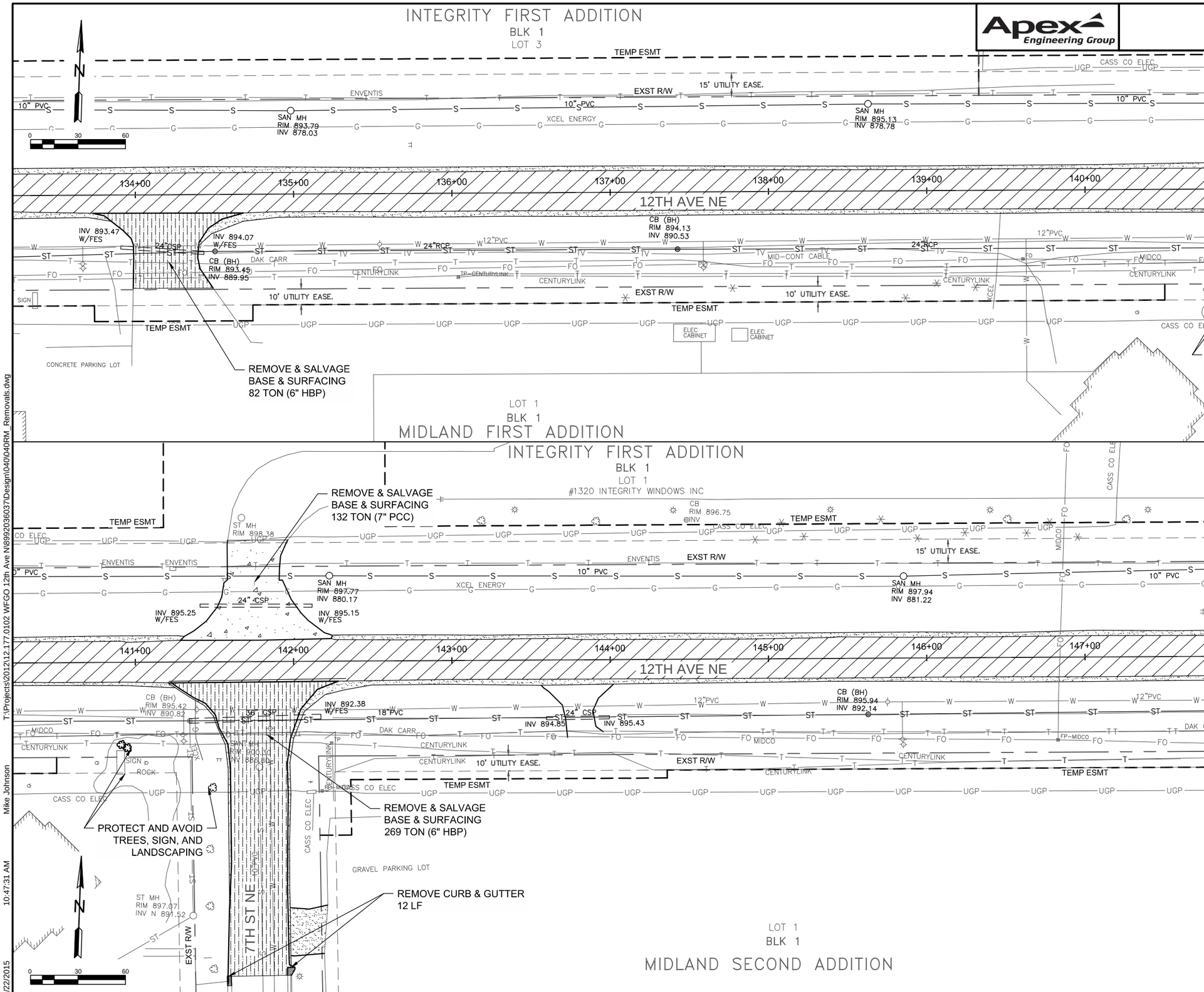
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	40	6



202 0165 REMOVE & SALVAGE BASE & SURFACING

⑤	Sta 133+50 TO 140+50 ℄	1267 TON
①	Sta 134+25 RT	82 TON
⑤	Sta 140+50 to Sta 147+50 ℄	1292 TON
⑥	Sta 141+75 LT	132 TON
①	Sta 141+75 RT	269 TON
	Total	3042 TON

202 0130 REMOVAL OF CURB & GUTTER

Sta 141+75 RT	12 LF

Notes:

1. Refer to Section 55 for information and quanitities of water, storm sewer, and sanitary sewer facilities to be removed or abandoned.

Legend

①	6" HBP (Base not Salvagable)
②	6" HBP 6" Aggregate
③	8" HBP 6" Aggregate
④	12" HBP 6" Aggregate
⑤	13" HBP (Base not Salvagable)
⑥	7" PCC (Base not Salvagable)
⑦	7" PCC 6" Aggregate
⑧	Aggregate (not Salvagable)
⑨	6" Aggregate

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12TH AVENUE NORTH RECONSTRUCTION

REMOVALS

STA 133+50 - 147+50

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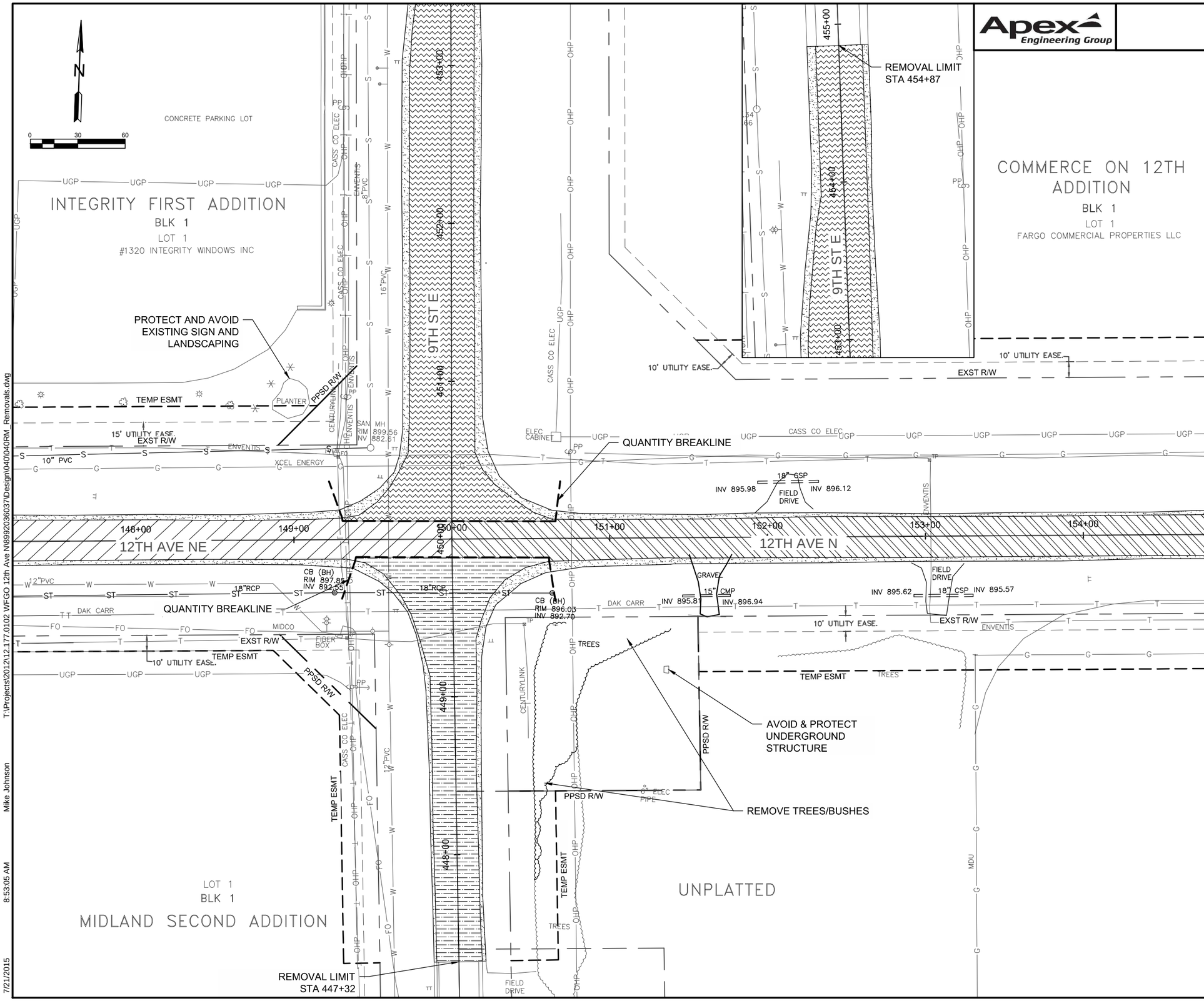
7/22/2015



Apex Engineering Group

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	40	7

202 0165 REMOVE & SALVAGE BASE & SURFACING

⑤	Sta 147+50 to Sta 150+00 ℄	448 TON
④	Sta 150+00 to Sta 154+50 ℄	1128 TON
②	Sta 447+32 to Sta 449+88 ℄ (9th St Alignment)	625 TON
③	Sta 450+11 to Sta 454+87 ℄ (9th St Alignment)	1550 TON
	Total	3751 TON

Notes:

1. Refer to Section 55 for information and quanitities of water, storm sewer, and sanitary sewer facilities to be removed or abandoned.

Legend

①	6" HBP (Base not Salvagable)
②	6" HBP 6" Aggregate
③	8" HBP 6" Aggregate
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⑧	Aggregate (not Salvagable)
⑨	6" Aggregate

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12TH AVENUE NORTH RECONSTRUCTION

REMOVALS

STA 147+50 - 154+50

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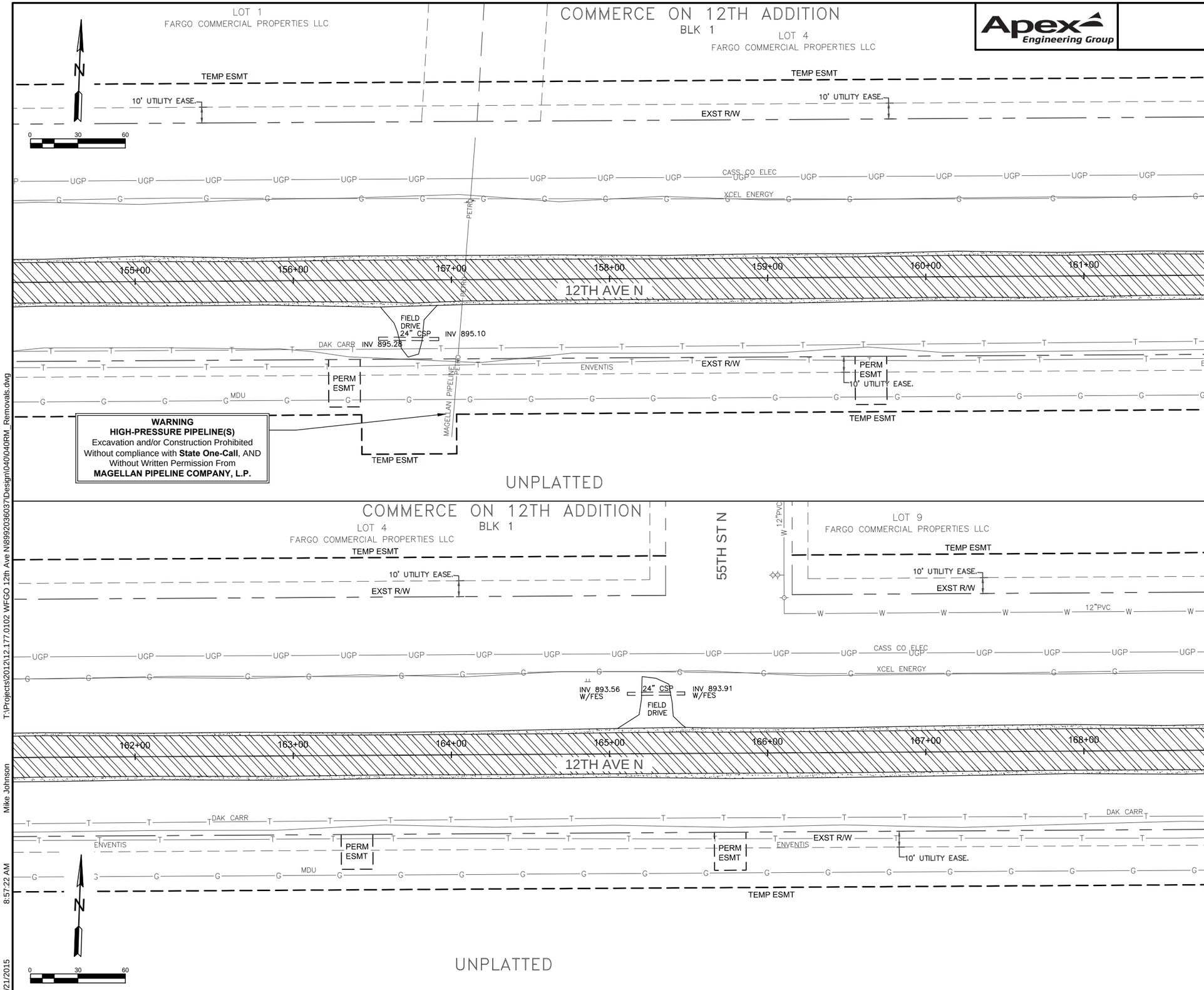
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	40	8

Apex Engineering Group



202 0165 REMOVE & SALVAGE BASE & SURFACING

4	Sta 154+50 to Sta 161+50 ℄	1791 TON
4	Sta 161+50 to Sta 168+50 ℄	1781 TON
	Total	3572 TON

Notes:

1. Refer to Section 55 for information and quanitities of water, storm sewer, and sanitary sewer facilities to be removed or abandoned.

Legend

1	6" HBP (Base not Salvagable)
2	6" HBP 6" Aggregate
3	8" HBP 6" Aggregate
4	12" HBP 6" Aggregate
5	13" HBP (Base not Salvagable)
6	7" PCC (Base not Salvagable)
7	7" PCC 6" Aggregate
8	Aggregate (not Salvagable)
9	6" Aggregate

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12TH AVENUE NORTH RECONSTRUCTION

REMOVALS

STA 154+50 - 168+50

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Mike Johnson

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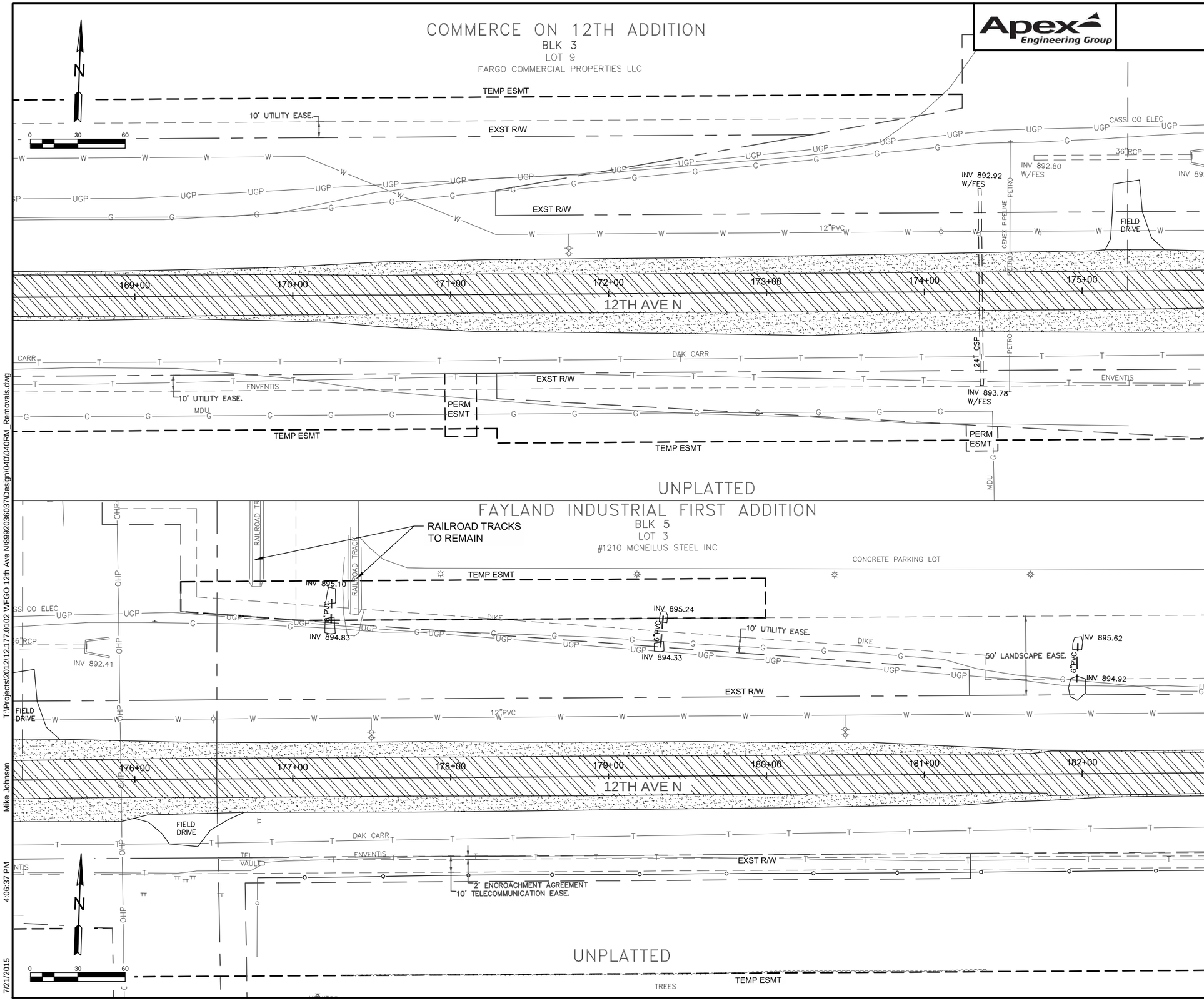
7/21/2015

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	40	9



202 0165 REMOVE & SALVAGE BASE & SURFACING

(4)	Sta 168+50 to Sta 175+50 ℄	1736 TON
(4)	Sta 175+50 to Sta 182+50 ℄	1759 TON
	Total	3495 TON

Notes:

1. Refer to Section 55 for information and quanitities of water, storm sewer, and sanitary sewer facilities to be removed or abandoned.

Legend

(1)	6" HBP (Base not Salvagable)
(2)	6" HBP 6" Aggregate
(3)	8" HBP 6" Aggregate
(4)	12" HBP 6" Aggregate
(5)	13" HBP (Base not Salvagable)
(6)	7" PCC (Base not Salvagable)
(7)	7" PCC 6" Aggregate
(8)	Aggregate (not Salvagable)
(9)	6" Aggregate

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12TH AVENUE NORTH RECONSTRUCTION

REMOVALS

STA 168+50 - 182+50

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Mike Johnson

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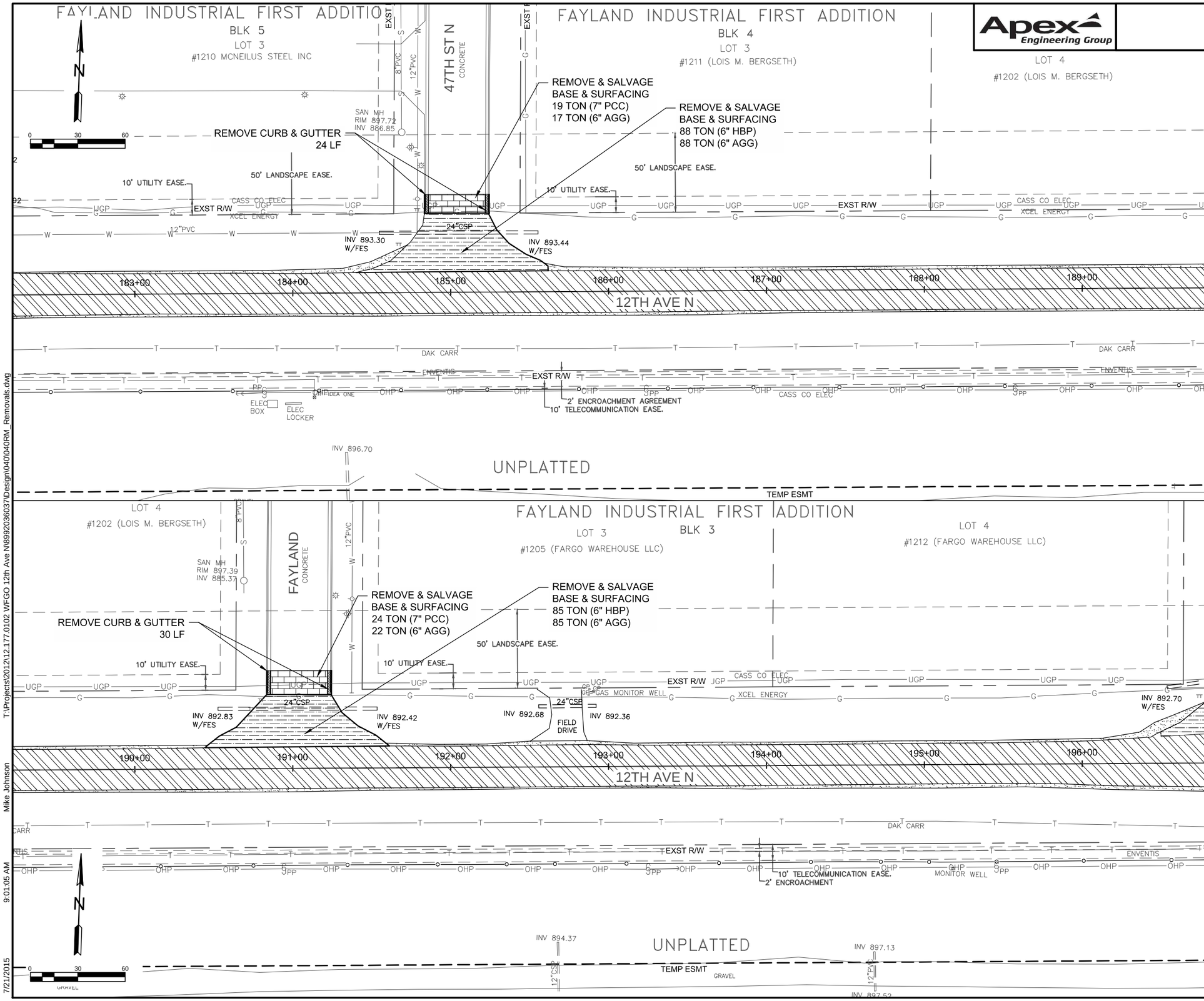
7/21/2015

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	40	10



202 0165 REMOVE & SALVAGE BASE & SURFACING

⑤	Sta 182+50 TO 189+50 ℄	1828 TON
②	Sta 185+00 LT	176 TON
⑦	Sta 185+00 LT	36 TON
⑤	Sta 189+50 to Sta 196+50 ℄	1855 TON
②	Sta 191+00 LT	170 TON
⑦	Sta 191+00 LT	46 TON
	Total	4111 TON

202 0130 REMOVAL OF CURB & GUTTER

Sta 185+00 LT	24 LF
Sta 191+00 LT	30 LF
Total	54 LF

Notes:

1. Refer to Section 55 for information and quanitities of water, storm sewer, and sanitary sewer facilities to be removed or abandoned.

Legend

① 6" HBP (Base not Salvagable)
② 6" HBP 6" Aggregate
③ 8" HBP 6" Aggregate
④ 12" HBP 6" Aggregate
⑤ 13" HBP (Base not Salvagable)
⑥ 7" PCC (Base not Salvagable)
⑦ 7" PCC 6" Aggregate
⑧ Aggregate (not Salvagable)
⑨ 6" Aggregate

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12TH AVENUE NORTH RECONSTRUCTION

REMOVALS

STA 182+50 - 196+50

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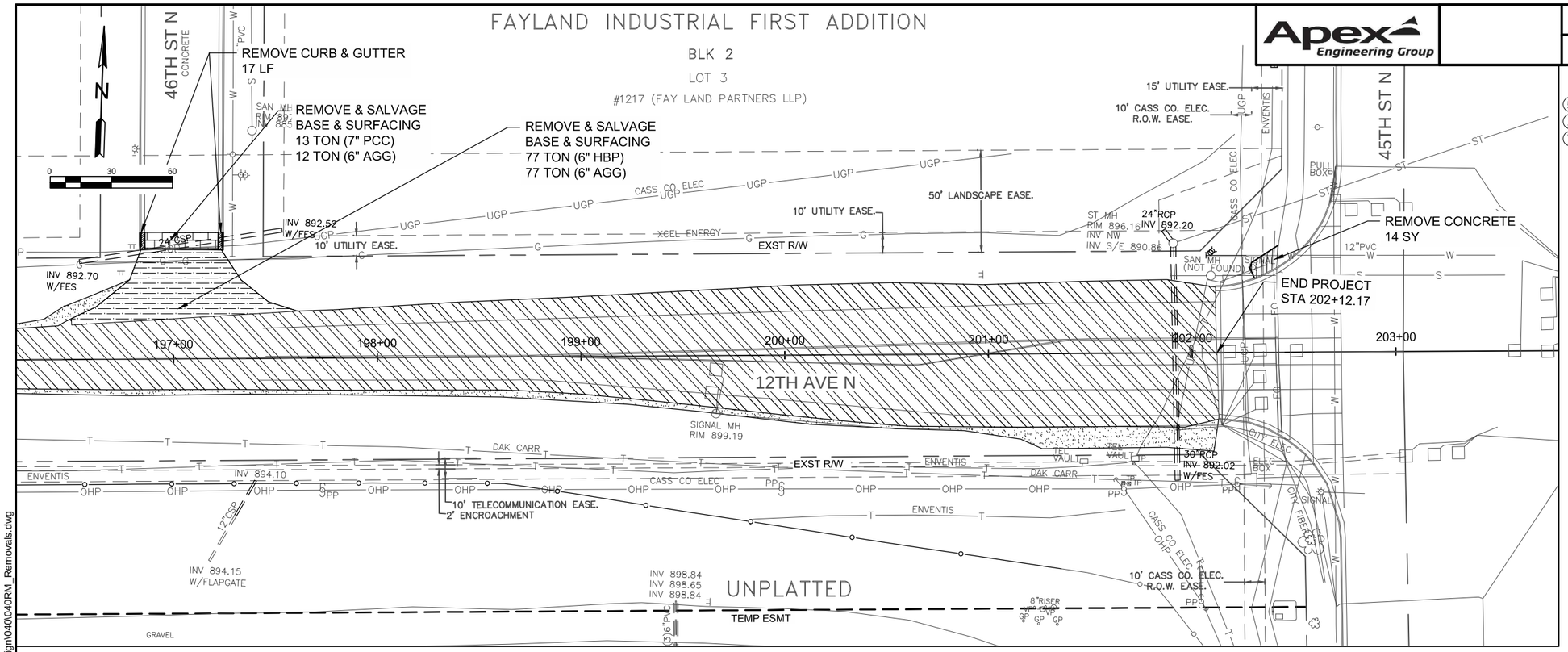

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	40	11

202 0165 REMOVE & SALVAGE BASE & SURFACING

⑤	Sta 196+50 to 202+13 ℄	2897 TON
②	Sta 197+00 LT	154 TON
⑦	Sta 197+00 LT	25 TON
	Total	3076 TON

202 0130 REMOVAL OF CONCRETE

Sta 202+35 LT	14 SY

202 0130 REMOVAL OF CURB & GUTTER

Sta 197+00 LT	17 LF

Notes:

1. Refer to Section 55 for information and quanitities of water, storm sewer, and sanitary sewer facilities to be removed or abandoned.

Legend

① 6" HBP (Base not Salvagable)
② 6" HBP 6" Aggregate
③ 8" HBP 6" Aggregate
④ 12" HBP 6" Aggregate
⑤ 13" HBP (Base not Salvagable)
⑥ 7" PCC (Base not Salvagable)
⑦ 7" PCC 6" Aggregate
⑧ Aggregate (not Salvagable)
⑨ 6" Aggregate

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12TH AVENUE NORTH RECONSTRUCTION

REMOVALS

STA 196+50 - 203+50

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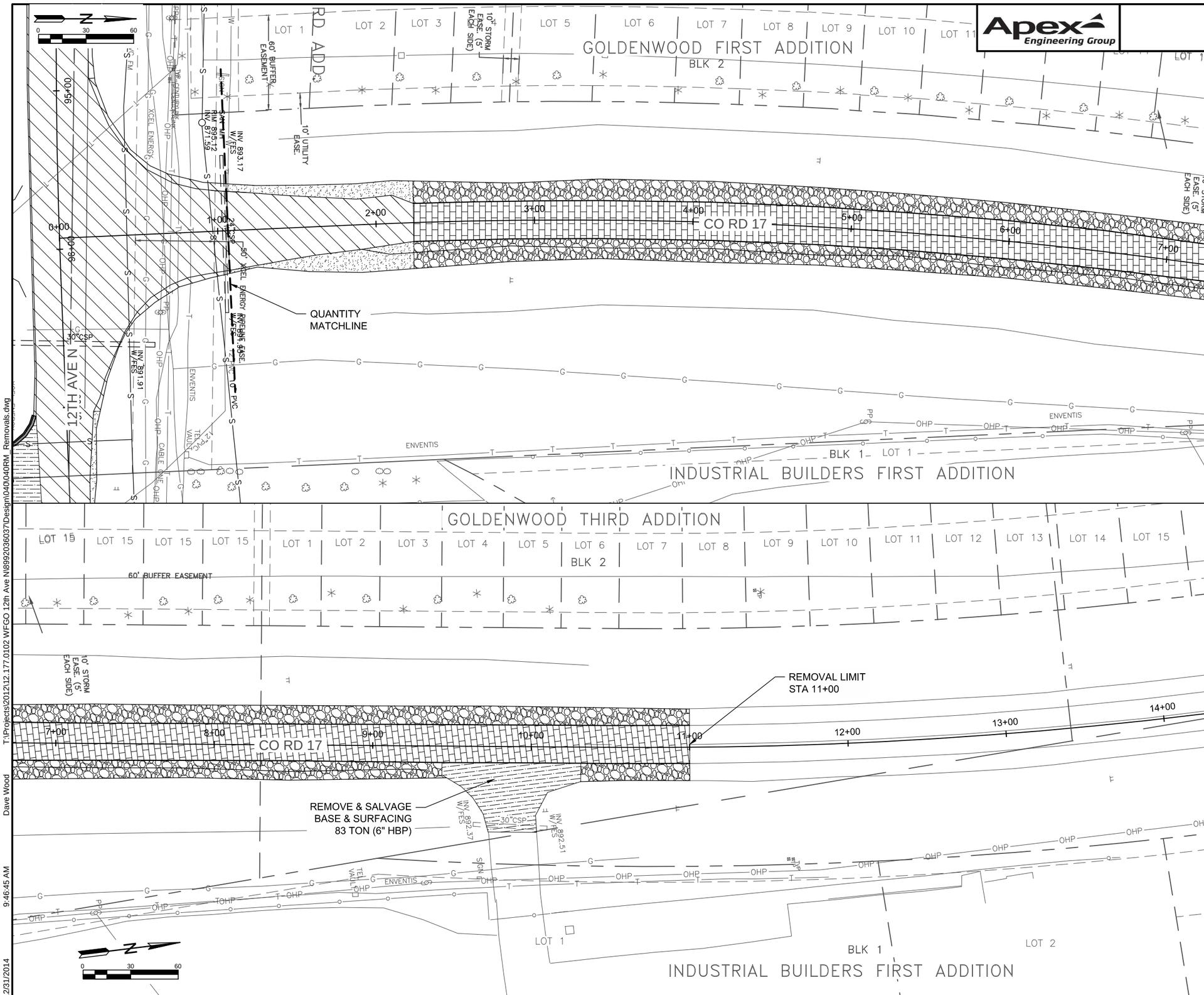
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	40	12



202 0165 REMOVE & SALVAGE BASE & SURFACING

⑤	Sta 1+06 to Sta 2+24 ℄	299 TON
⑦	Sta 2+24 to Sta 7+00 ℄	889 TON
⑨	Sta 2+24 to Sta 7+00 LT & RT	211 TON
⑦	Sta 7+00 to Sta 11+00 ℄	736 TON
⑨	Sta 7+00 to Sta 11+00 LT & RT	141 TON
①	Sta 9+75 RT	83 TON
	Total	2359 TON

Notes:

1. Stationing based on Co Rd 17 alignment.
2. Refer to Section 55 for information and quanitities of water, storm sewer, and sanitary sewer facilities to be removed or abandoned.
2. Removal quantity matchline for 12th Avenue North is at Sta 1+06. Refer to Section 40 Sheet 3 for 12th Avenue North quantities.

Legend

①	6" HBP (Base not Salvagable)
②	6" HBP 6" Aggregate
③	8" HBP 6" Aggregate
④	12" HBP 6" Aggregate
⑤	13" HBP (Base not Salvagable)
⑥	7" PCC (Base not Salvagable)
⑦	7" PCC 6" Aggregate
⑧	Aggregate (not Salvagable)
⑨	6" Aggregate

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12TH AVENUE NORTH RECONSTRUCTION

REMOVALS - CO RD 17

STA 0+00 TO STA 11+00

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12/31/2014

moore engineering, inc.

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
N.D.	SU-8-992(036)037	20057	50	1

ST-3

Type	Manhole 48 IN	
Station	76+92 - 13.0' Rt	
Grate/Casting Type	Floating	
Rim Elev.	899.20	
Base Elev.	893.01	
Riser	3.94 Ft	
Invert E:	893.26	24 IN RCP
Invert W:	893.26	24 IN RCP

ST-4

Type	Manhole 60 IN	
Station	78+25 - 13.0' Rt	
Grate/Casting Type	Floating	
Rim Elev.	898.37	
Base Elev.	892.77	
Riser	2.25 Ft	
Invert E:	893.06	18 IN RCP
Invert W:	893.06	24 IN RCP
Invert N:	893.06	30 IN RCP
Invert S:	894.06	15 IN RCP

ST-4.1

Type	Manhole 60 IN	
Station	78+25 - 21.5' Lt	
Grate/Casting Type	Floating	
Rim Elev.	898.14	
Base Elev.	892.73	
Riser	2.99 Ft	
Invert S:	893.02	30 IN RCP
Invert N:	893.02	30 IN RCP

ST-4.2

Type	Check Valve - 30 IN	
Station	78+25 - 43.0' Lt	
Invert Elev.	893.00	30 IN RCP

ST-4.3

Type	Manhole 48 IN	
Station	78+25 - 21.5' Rt	
Grate/Casting Type	Curb	
Rim Elev.	898.14	
Base Elev.	893.89	
'H' Distance	3.58 Ft	
Invert N:	894.14	15 IN RCP

ST-4.4

Type	End Section - 15 IN	
Station	78+25 - 55.0' Rt	
Invert Elev.	895.00	15 IN RCP

ST-5

Type	Manhole 48 IN	
Station	80+19 - 13.0' Rt	
Grate/Casting Type	Floating	
Rim Elev.	899.19	
Base Elev.	893.24	
Riser	3.53 Ft	
Invert S:	893.49	15 IN RCP
Invert E:	893.49	15 IN RCP
Invert W:	893.49	18 IN RCP

ST-5.1

Type	Manhole 60 IN	
Station	80+19 - 36.0' Rt	
Grate/Casting Type	Manhole	
Rim Elev.	897.50	
Base Elev.	893.30	
Riser	2.62 Ft	
Invert NW:	893.62	15 IN RCP
Invert N:	893.50	15 IN RCP

ST-5.2

Type	Inlet - Type 2	
Grate Style	Curb	
Station	80+02 - 26.5' Rt	
Rim Elev.	898.59	
Base Elev.	894.34	
'H' Distance	3.58 Ft	
Invert W:	894.59	15 IN RCP
Invert SE:	894.59	15 IN RCP

ST-5.3

Type	Inlet - Type 2	
Grate Style	Curb	
Station	79+28 - 26.5' Rt	
Rim Elev.	898.24	
Base Elev.	894.55	
'H' Distance	3.02 Ft	
Invert E:	894.80	15 IN RCP

ST-6

Type	Manhole 48 IN	
Station	84+21 - 13.0' Rt	
Grate/Casting Type	Floating	
Rim Elev.	898.78	
Base Elev.	894.36	
Riser	2.17 Ft	
Invert E:	894.61	15 IN RCP
Invert W:	894.61	15 IN RCP

ST-7

Type	Manhole 48 IN	
Station	85+00 - 13.0' Rt	
Grate/Casting Type	Floating	
Rim Elev.	898.47	
Base Elev.	894.58	
Riser	1.64 Ft	
Invert S:	894.83	15 IN RCP
Invert N:	894.83	15 IN RCP
Invert W:	894.83	15 IN RCP

ST-7.1

Type	Inlet - Type 2	
Grate Style	Curb	
Station	85+00 - 21.5' Lt	
Rim Elev.	898.24	
Base Elev.	894.68	
'H' Distance	2.89 Ft	
Invert S:	894.93	15 IN RCP

ST-7.2

Type	Inlet - Type 2	
Grate Style	Curb	
Station	85+00 - 21.5' Rt	
Rim Elev.	898.24	
Base Elev.	894.60	
'H' Distance	2.97 Ft	
Invert N:	894.85	15 IN RCP

ST-7.3

Type	End Section - 15 IN	
Station	85+00 - 42.5' Rt	
Invert Elev.	895.00	15 IN RCP

ST-8

Type	Manhole 48 IN	
Station	90+00 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	900.72	
Base Elev.	893.23	
Riser	5.24 Ft	
Invert E:	893.48	15 IN RCP
Invert NW:	893.48	15 IN RCP

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12TH AVENUE NORTH RECONSTRUCTION

INLET & MANHOLE SUMMARY

INLET & MANHOLE SUMMARY

ST-8.1

Type	Check Valve - 15 IN	
Station	88+47 - 91.0' Lt	
Invert Elev.	893.00	15 IN RCP

ST-9

Type	Manhole 48 IN	
Station	92+11 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	900.30	
Base Elev.	893.82	
Riser	4.23 Ft	
Invert S:	894.79	15 IN RCP
Invert N:	894.07	15 IN RCP
Invert W:	894.07	15 IN RCP
Invert E:	894.67	15 IN RCP

ST-9.1

Type	Inlet	
Grate Style	Stool	
Station	92+11 - 69.0' Lt	
Rim Elev.	896.75	
Base Elev.	893.98	
'H' Distance	2.43 Ft	
Invert S:	894.23	15 IN. RCP

ST-9.2

Type	End Section - 15 IN	
Station	92+00 - 60.8' Rt	
Invert Elev.	895.00	15 IN RCP

ST-10

Type	Manhole 48 IN	
Station	92+62 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	899.99	
Base Elev.	894.56	
Riser	3.18 Ft	
Invert N:	894.81	15 IN RCP
Invert S:	895.38	15 IN RCP
Invert W:	894.81	15 IN RCP

ST-10.1

Type	Inlet - Type 2	
Grate Style	Curb	
Station	92+72 - 49.7' Lt	
Rim Elev.	898.92	
Base Elev.	894.67	
'H' Distance	3.58 Ft	
Invert E:	894.92	15 IN RCP
Invert S:	894.92	15 IN RCP

ST-10.2

Type	Inlet - Type 2	
Grate Style	Curb	
Station	93+18 - 49.8' Lt	
Rim Elev.	898.85	
Base Elev.	894.80	
'H' Distance	3.38 Ft	
Invert W:	895.05	15 IN RCP

ST-10.3

Type	Inlet - Type 2	
Grate Style	Curb	
Station	92+62 - 26.8' Rt	
Rim Elev.	899.49	
Base Elev.	895.24	
'H' Distance	3.58 Ft	
Invert E:	895.49	15 IN RCP
Invert N:	895.49	15 IN RCP

ST-10.4

Type	Inlet - Type 2	
Grate Style	Curb	
Station	93+13 - 27.0' Rt	
Rim Elev.	899.43	
Base Elev.	895.38	
'H' Distance	3.38 Ft	
Invert W:	895.63	15 IN RCP

ST-11

Type	Manhole 72 IN	
Station	96+62 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	898.55	
Base Elev.	886.32	
Riser	9.81 Ft	
Invert S:	891.28	15 IN RCP
Invert N:	886.61	30 IN RCP
Invert E:	886.61	30 IN RCP

ST-11.1

Type	Manhole 60 IN	
Station	96+62 - 87.0' Lt	
Grate/Casting Type	Stool	
Rim Elev.	892.50	
Base Elev.	886.40	
Riser	4.93 Ft	
Invert W:	886.69	21 IN RCP
Invert S:	886.69	30 IN RCP

ST-11.2

Type	Manhole 48 IN	
Station	95+36 - 97.6' Lt	
Grate/Casting Type	Stool	
Rim Elev.	893.77	
Base Elev.	886.66	
Riser	6.11 Ft	
Invert E:	886.91	21 IN RCP
Invert SE:	889.77	15 IN RCP

ST-11.3

Type	Manhole 48 IN	
Station	95+53 - 65.4' Lt	
Grate/Casting Style	Curb	
Rim Elev.	897.89	
Base Elev.	889.62	
Riser	7.27 Ft	
Invert NW:	889.87	15 IN RCP

ST-11.4

Type	Inlet	
Grate Style	Stool	
Station	96+31 - 57.5' Rt	
Rim Elev.	895.50	
Base Elev.	891.25	
'H' Distance	3.91 Ft	
Invert N:	891.50	15 IN RCP

ST-12

Type	Manhole 60 IN	
Station	97+00 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	898.34	
Base Elev.	886.28	
Riser	9.64 Ft	
Invert N:	892.53	15 IN RCP
Invert S:	893.77	15 IN RCP
Invert W:	886.57	30 IN RCP
Invert E:	886.57	30 IN RCP

ST-12.1

Type	Manhole 48 IN	
Station	97+00 - 31.5' Lt	
Grate/Casting Type	Curb	
Rim Elev.	898.12	
Base Elev.	892.47	
Riser	4.32 Ft	
Invert S:	892.72	15 IN RCP
Invert N:	892.72	15 IN RCP

ST-12.2

Type	Inlet	
Grate Style	Stool	
Station	96+96 - 43.0' Lt	
Rim Elev.	896.75	
Base Elev.	892.50	
'H' Distance	3.91 Ft	
Invert S:	892.75	15 IN RCP

ST-12.3

Type	Inlet - Type 2	
Grate Style	Curb	
Station	97+00 - 21.5' Rt	
Rim Elev.	898.12	
Base Elev.	893.87	
'H' Distance	3.58 Ft	
Invert N:	894.12	15 IN RCP

ST-12.4

Type	Inlet - Type 2	
Grate Style	Curb	
Station	97+20 - 32.3' Rt	
Rim Elev.	897.84	
Base Elev.	893.93	
'H' Distance	3.24 Ft	
Invert E:	894.18	15 IN RCP
Invert W:	894.18	15 IN RCP

ST-12.5

Type	Inlet - Type 2	
Grate Style	Curb	
Station	97+68 - 32.1' Rt	
Rim Elev.	897.84	
Base Elev.	894.06	
'H' Distance	3.11 Ft	
Invert W:	894.31	15 IN RCP

ST-13

Type	Manhole 84 IN	
Station	99+89 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	899.50	
Base Elev.	885.92	
Riser	11.16 Ft	
Invert N:	890.41	24 IN RCP
Invert W:	886.25	30 IN RCP
Invert E:	886.25	36 IN RCP
Invert SW:	891.03	15 IN RCP
Invert NE:	892.14	15 IN RCP

ST-13.1

Type	Manhole 48 IN	
Station	99+89 - 70.0' Lt	
Grate/Casting Type	Stool	
Rim Elev.	896.50	
Base Elev.	890.25	
Riser	5.25 Ft	
Invert S:	890.50	24 IN RCP

ST-13.2

Type	Inlet	
Grate Style	Stool	
Station	100+21- 41.0' Lt	
Rim Elev.	896.30	
Base Elev.	892.05	
'H' Distance	3.91 Ft	
Invert SW:	892.30	15 IN RCP

ST-13.3

Type	Inlet	
Grate Style	Stool	
Station	99+17 - 53.5' Rt	
Rim Elev.	895.30	
Base Elev.	891.05	
'H' Distance	3.91 Ft	
Invert N:	891.30	15 IN RCP

ST-14

Type	Manhole 60 IN	
Station	101+29 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	899.69	
Base Elev.	885.79	
Riser	11.48 Ft	
Invert N:	894.01	15 IN RCP
Invert W:	886.12	36 IN RCP
Invert E:	886.12	36 IN RCP

ST-14.1

Type	Inlet - Type 2	
Grate Style	Curb	
Station	101+29 - 64.8' Lt	
Rim Elev.	898.16	
Base Elev.	893.91	
'H' Distance	3.58 Ft	
Invert W:	894.16	15 IN RCP
Invert S:	894.16	15 IN RCP

ST-14.2

Type	Inlet - Type 2	
Grate Style	Curb	
Station	100+93 - 64.5' Lt	
Rim Elev.	898.16	
Base Elev.	894.01	
'H' Distance	3.48 Ft	
Invert E:	894.26	15 IN RCP

ST-15

Type	Manhole 72 IN	
Station	102+56 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	899.00	
Base Elev.	885.64	
Riser	10.94 Ft	
Invert W:	886.01	36 IN RCP
Invert E:	886.01	42 IN RCP
Invert S:	890.81	15 IN RCP

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12TH AVENUE NORTH RECONSTRUCTION

INLET & MANHOLE SUMMARY

INLET & MANHOLE SUMMARY

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ST-15.1

Type	Inlet	
Grate Style	Stool	
Station	102+56 - 53.5' Rt	
Rim Elev.	895.00	
Base Elev.	890.75	
'H' Distance	3.91 Ft	
Invert N:	891.00	15 IN RCP

ST-16

Type	Manhole 84 IN	
Station	103+05 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	898.71	
Base Elev.	885.56	
Riser	10.73 Ft	
Invert W:	885.98	42 IN RCP
Invert N:	891.45	24 IN RCP
Invert E:	885.98	48 IN RCP

ST-16.1

Type	Manhole 48 IN	
Station	103+05 - 45.0' Lt	
Grate/Casting Type	Stool	
Rim Elev.	895.00	
Base Elev.	890.75	
Riser	3.25 Ft	
Invert S:	891.00	24 IN RCP

ST-17

Type	Manhole 84 IN	
Station	103+85 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	898.41	
Base Elev.	885.51	
Riser	10.48 Ft	
Invert N:	892.96	15 IN RCP
Invert S:	890.55	15 IN RCP
Invert W:	885.93	48 IN RCP
Invert E:	885.93	48 IN RCP

ST-17.1

Type	Inlet - Type 2	
Grate Style	Curb	
Station	103+85 - 30.1' Lt	
Rim Elev.	898.19	
Base Elev.	892.88	
'H' Distance	4.64 Ft	
Invert S:	893.13	15 IN RCP

ST-17.2

Type	Manhole 48 IN	
Station	103+85 - 21.5' Rt	
Grate/Casting Type	Curb	
Rim Elev.	898.19	
Base Elev.	890.64	
Riser	6.22 Ft	
Invert N:	890.89	15 IN RCP
Invert SE:	890.89	15 IN RCP

ST-17.3

Type	Inlet	
Grate Style	Stool	
Station	104+14 - 50.0' Rt	
Rim Elev.	895.00	
Base Elev.	890.75	
'H' Distance	3.91 Ft	
Invert NW:	891.00	15 IN RCP

ST-18

Type	Manhole 84 IN	
Station	105+21 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	898.87	
Base Elev.	885.43	
Riser	11.02 Ft	
Invert N:	891.42	15 IN RCP
Invert W:	885.85	48 IN RCP
Invert E:	885.85	48 IN RCP

ST-18.1

Type	Inlet	
Grate Style	Stool	
Station	105+21 - 41.0' Lt	
Rim Elev.	895.50	
Base Elev.	891.25	
'H' Distance	3.91 Ft	
Invert S:	891.50	15 IN RCP

ST-19

Type	Manhole 84 IN	
Station	107+18 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	899.65	
Base Elev.	885.25	
Riser	11.98 Ft	
Invert S:	889.81	27 IN RCP
Invert W:	885.67	48 IN RCP
Invert E:	885.67	48 IN RCP

ST-19.1

Type	Manhole 60 IN	
Station	107+18 - 42.1' Rt	
Grate/Casting Type	Manhole	
Rim Elev.	898.75	
Base Elev.	889.61	
Riser	7.39 Ft	
Invert E:	889.96	24 IN RCP
Invert N:	889.88	27 IN RCP

ST-19.2

Type	Manhole 48 IN	
Station	107+46 - 49.0' Rt	
Grate/Casting Type	Manhole	
Rim Elev.	898.55	
Base Elev.	889.75	
Riser	7.22 Ft	
Invert W:	890.00	24 IN RCP
Invert S:	892.96	24 IN RCP

ST-19.3

Type	End Section - 24 IN	
Station	107+46 - 74.0' Rt	
Invert Elev.	893.00	24 IN RCP

ST-20

Type	Manhole 96 IN	
Station	108+20 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	899.35	
Base Elev.	885.15	
Riser	11.78 Ft	
Invert S:	886.52	27 IN RCP
Invert W:	885.61	48 IN RCP
Invert E:	885.61	54 IN RCP

ST-20.1

Type	Inlet - Type 2	
Grate Style	Curb	
Station	107+98 - 60.8' Lt	
Rim Elev.	897.45	
Base Elev.	893.20	
'H' Distance	3.58 Ft	
Invert W:	893.45	15 IN RCP
Invert S:	893.45	15 IN RCP

ST-20.2

Type	Inlet - Type 2	
Grate Style	Curb	
Station	107+66 - 60.8' Lt	
Rim Elev.	897.45	
Base Elev.	893.29	
'H' Distance	3.49 Ft	
Invert W:	893.54	15 IN RCP
Invert E:	893.54	15 IN RCP

ST-20.3

Type	Inlet	
Grate Style	Stool	
Station	107+41 - 60.8' Lt	
Rim Elev.	896.75	
Base Elev.	893.36	
'H' Distance	3.30 Ft	
Invert E:	893.61	15 IN RCP

ST-20.4

Type	Manhole 60 IN	
Station	2+14 - 36.1' Rt	
Grate/Casting Type	Stool	
Rim Elev.	895.00	
Base Elev.	886.55	
Riser	7.28 Ft	
Invert N:	886.82	27 IN RCP
Invert S:	886.82	27 IN RCP

ST-20.5

Type	Manhole 60 IN	
Station	5+01 - 33.5' Rt	
Grate/Casting Type	Stool	
Rim Elev.	894.00	
Base Elev.	886.92	
Riser	5.91 Ft	
Invert E:	887.19	24 IN RCP
Invert N:	887.19	27 IN RCP

ST-21

Type	Manhole 96 IN	
Station	110+60 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	898.36	
Base Elev.	885.03	
Riser	10.91 Ft	
Invert N:	891.35	15 IN RCP
Invert S:	889.57	15 IN RCP
Invert W:	885.49	54 IN RCP
Invert E:	885.49	54 IN RCP

ST-21.1

Type	Manhole 48 IN	
Station	110+60 - 21.5' Lt	
Grate/Casting Type	Curb	
Rim Elev.	898.14	
Base Elev.	891.19	
Riser	5.62 Ft	
Invert S:	891.44	15 IN RCP
Invert NE:	891.44	15 IN RCP

ST-21.2

Type	Inlet	
Grate Style	Stool	
Station	110+74 - 39.0' Lt	
Rim Elev.	895.50	
Base Elev.	891.25	
'H' Distance	3.91 Ft	
Invert SW:	891.50	15 IN RCP

ST-21.3

Type	Manhole 48 IN	
Station	110+60 - 21.5' Rt	
Grate/Casting Type	Curb	
Rim Elev.	898.14	
Base Elev.	889.66	
Riser	7.15 Ft	
Invert SE:	889.91	15 IN RCP
Invert N:	889.91	15 IN RCP

ST-21.4

Type	Inlet	
Grate Style	Stool	
Station	110+75 - 48.0' Rt	
Rim Elev.	894.00	
Base Elev.	889.75	
'H' Distance	3.91 Ft	
Invert NW:	890.00	15 IN RCP

ST-22

Type	Manhole 96 IN	
Station	112+09 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	898.88	
Base Elev.	884.92	
Riser	11.54 Ft	
Invert N:	891.91	21 IN RCP
Invert W:	885.42	54 IN RCP
Invert E:	885.42	60 IN RCP

ST-22.1

Type	Manhole 48 IN	
Station	112+09 - 65.0' Lt	
Grate/Casting Type	Stool	
Rim Elev.	896.00	
Base Elev.	891.75	
Riser	3.08 Ft	
Invert S.	892.00	21 IN RCP

ST-23

Type	Manhole 96 IN	
Station	114+50 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	898.24	
Base Elev.	884.82	
Riser	11.00 Ft	
Invert N:	890.35	15 IN RCP
Invert S:	886.86	18 IN RCP
Invert W:	885.32	60 IN RCP
Invert E:	885.32	60 IN RCP

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12TH AVENUE NORTH RECONSTRUCTION

INLET & MANHOLE SUMMARY

INLET & MANHOLE SUMMARY

FILE LOCATION: R:\Civil 3D Projects\16843\DRAWINGS\DESIGN\16843-COVER-NOTES.dwg

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moore engineering, inc.

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
N.D.	SU-8-992(036)037	20057	50	4

ST-23.1

Type	Manhole 48 IN	
Station	114+50 - 21.5' Lt	
Grate/Casting Type	Curb	
Rim Elev.	898.02	
Base Elev.	890.19	
Riser	6.50 Ft	
Invert N:	890.44	15 IN RCP
Invert S:	890.44	15 IN RCP

ST-23.2

Type	Inlet	
Grate Style	Stool	
Station	114+50 - 42.0' Lt	
Rim Elev.	894.50	
Base Elev.	890.25	
'H' Distance	3.91 Ft	
Invert S:	890.50	15 IN RCP

ST-23.3

Type	Manhole 48 IN	
Station	114+50 - 21.5' Rt	
Grate/Casting Type	Curb	
Rim Elev.	898.02	
Base Elev.	886.95	
Riser	9.74 Ft	
Invert N:	887.20	18 IN RCP
Invert S:	887.20	18 IN RCP

ST-23.4

Type	Manhole 48 IN	
Station	114+50 - 46.0' Rt	
Grate/Casting Type	Stool	
Rim Elev.	893.25	
Base Elev.	887.00	
Riser	5.25 Ft	
Invert N:	887.25	18 IN RCP

ST-24

Type	Manhole Multi	
Station	117+21 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	898.76	
Base Elev.	884.65	
Riser	11.86 Ft	
Invert S:	889.33	15 IN RCP
Invert W:	885.19	60 IN RCP
Invert E:	885.19	66 IN RCP

ST-24.1

Type	Inlet	
Grate Style	Stool	
Station	117+21 - 46.0' Rt	
Rim Elev.	893.50	
Base Elev.	889.25	
'H' Distance	3.91 Ft	
Invert N:	889.50	15 IN RCP

ST-25

Type	Manhole Multi	
Station	118+50 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	898.24	
Base Elev.	884.60	
Riser	11.39 Ft	
Invert N:	890.37	18 IN RCP
Invert S:	893.68	15 IN RCP
Invert W:	885.14	66 IN RCP
Invert E:	885.14	66 IN RCP

ST-25.1

Type	Manhole 48 IN	
Station	118+50 - 21.8' Lt	
Grate/Casting Type	Curb	
Rim Elev.	898.02	
Base Elev.	890.21	
Riser	6.48 Ft	
Invert N:	890.46	18 IN RCP
Invert S:	890.46	18 IN RCP

ST-25.2

Type	Inlet	
Grate Style	Stool	
Station	118+50 - 42.0' Lt	
Rim Elev.	894.50	
Base Elev.	890.25	
'H' Distance	3.91 Ft	
Invert S:	890.50	18 IN RCP

ST-25.3

Type	Inlet - Type 2	
Grate Style	Curb	
Station	118+50 - 21.5' Rt	
Rim Elev.	898.02	
Base Elev.	893.77	
'H' Distance	3.58 Ft	
Invert SE:	894.40	15 IN RCP
Invert N:	894.02	15 IN RCP

ST-25.4

Type	End Section - 15 IN	
Station	118+75 - 46.0' Rt	
Invert Elev.	894.50	15 IN RCP

ST-26

Type	Manhole Multi	
Station	120+02 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	899.00	
Base Elev.	884.50	
Riser	12.25 Ft	
Invert N:	886.08	30 IN RCP
Invert W:	885.08	66 IN RCP
Invert E:	885.08	72 IN RCP

ST-26.1

Type	Manhole 60 IN	
Station	120+02 - 65.0' Lt	
Grate/Casting Type	Stool	
Rim Elev.	895.00	
Base Elev.	885.89	
Riser	7.94 Ft	
Invert S.	886.14	30 IN RCP

ST-27

Type	Manhole Multi	
Station	123+00 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	898.47	
Base Elev.	884.38	
Riser	12.36 Ft	
Invert N:	893.53	15 IN RCP
Invert S:	890.00	15 IN RCP
Invert W:	884.96	72 IN RCP
Invert E:	884.96	72 IN RCP

ST-27.1

Type	Inlet - Type 2	
Grate Style	Curb	
Station	122+19 - 41.0' Lt	
Rim Elev.	897.80	
Base Elev.	893.81	
'H' Distance	3.32 Ft	
Invert E:	894.06	15 IN RCP

ST-27.2

Type	Inlet - Type 2	
Grate Style	Curb	
Station	122+87 - 40.9' Lt	
Rim Elev.	897.80	
Base Elev.	893.55	
'H' Distance	3.58 Ft	
Invert W:	893.80	15 IN RCP
Invert SE:	893.80	15 IN RCP

ST-27.3

Type	Inlet - Type 2	
Grate Style	Curb	
Station	123+00 - 33.6' Lt	
Rim Elev.	897.32	
Base Elev.	893.49	
'H' Distance	3.16 Ft	
Invert S:	893.74	15 IN RCP
Invert NW:	893.74	15 IN RCP

ST-27.4

Type	Manhole 48 IN	
Station	123+00 - 21.5' Rt	
Grate/Casting Type	Curb	
Rim Elev.	898.22	
Base Elev.	890.09	
Riser	6.80 Ft	
Invert SW:	890.34	15 IN RCP
Invert N:	890.34	15 IN RCP

ST-27.5

Type	Inlet	
Grate Style	Stool	
Station	122+50 - 46.0' Rt	
Rim Elev.	894.50	
Base Elev.	890.25	
'H' Distance	3.91 Ft	
Invert NE:	890.50	15 IN RCP

ST-28

Type	Manhole Multi	
Station	123+61 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	898.71	
Base Elev.	884.36	
Riser	12.10 Ft	
Invert W:	884.94	72 IN RCP
Invert NE:	884.94	72 IN RCP
Invert S:	892.46	15 IN RCP

ST-28.1

Type	Check Valve - 72 IN	
Station	124+09 - 88.9' Lt	
Invert Elev.	884.90	72 IN RCP

ST-28.2

Type	Inlet - Type 2	
Grate Style	Curb	
Station	123+33 - 60.5' Rt	
Rim Elev.	896.68	
Base Elev.	892.43	
'H' Distance	3.58 Ft	
Invert E:	892.68	15 IN RCP
Invert N:	892.68	15 IN RCP

ST-28.3

Type	Inlet - Type 2	
Grate Style	Curb	
Station	123+72 - 60.5' Rt	
Rim Elev.	896.68	
Base Elev.	892.54	
'H' Distance	3.47 Ft	
Invert W:	892.79	15 IN RCP

ST-29

Type	Manhole 96 IN	
Station	125+78 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	898.95	
Base Elev.	884.49	
Riser	12.79 Ft	
Invert S:	890.77	15 IN RCP
Invert N:	888.36	18 IN RCP
Invert E:	884.95	54 IN RCP
Invert NW:	884.95	54 IN RCP

ST-29.1

Type	Check Valve - 54 IN	
Station	124+62 - 94.4' Lt	
Invert Elev.	884.88	54 IN RCP

ST-29.2

Type	Manhole 48 IN	
Station	125+98 - 71.5' Lt	
Grate/Casting Type	Stool	
Rim Elev.	894.50	
Base Elev.	888.25	
Riser	5.25 Ft	
Invert S:	888.50	18 IN RCP

ST-29.3

Type	Inlet	
Grate Style	Stool	
Station	125+57 - 50.0' Rt	
Rim Elev.	894.95	
Base Elev.	890.70	
'H' Distance	3.91 Ft	
Invert N:	890.95	15 IN RCP

ST-30

Type	Manhole 96 IN	
Station	127+53 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	898.38	
Base Elev.	884.58	
Riser	11.38 Ft	
Invert N:	893.77	15 IN RCP
Invert S:	889.50	15 IN RCP
Invert E:	885.04	54 IN RCP
Invert W:	885.04	54 IN RCP

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12TH AVENUE NORTH RECONSTRUCTION

INLET & MANHOLE SUMMARY

INLET & MANHOLE SUMMARY

ST-30.1

Type	Inlet - Type 2	
Grate Style	Curb	
Station	127+53 - 31.5' Lt	
Rim Elev.	897.96	
Base Elev.	893.71	
'H' Distance	3.58 Ft	
Invert S:	893.96	15 IN RCP

ST-30.2

Type	Manhole 48 IN	
Station	127+53 - 31.5' Rt	
Grate/Casting Type	Curb	
Rim Elev.	897.96	
Base Elev.	889.69	
Riser	6.94 Ft	
Invert SE:	893.94	15 IN RCP
Invert N:	893.94	15 IN RCP

ST-30.3

Type	End Section - 15 IN	
Station	127+63 - 49.6' Rt	
Invert Elev.	894.00	15 IN RCP

ST-31

Type	Manhole 96 IN	
Station	129+75 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	898.23	
Base Elev.	884.69	
Riser	11.12 Ft	
Invert N:	890.16	18 IN RCP
Invert S:	888.41	18 IN RCP
Invert E:	885.15	54 IN RCP
Invert W:	885.15	54 IN RCP

ST-31.1

Type	Manhole 48 IN	
Station	129+75 - 31.5' Lt	
Grate/Casting Type	Curb	
Rim Elev.	897.82	
Base Elev.	889.95	
Riser	6.53 Ft	
Invert S:	890.20	18 IN RCP
Invert NE:	890.20	18 IN RCP

ST-31.2

Type	Manhole 48 IN	
Station	130+08 - 60.4' Lt	
Grate/Casting Type	Stool	
Rim Elev.	897.50	
Base Elev.	890.05	
Riser	6.45 Ft	
Invert SW:	890.30	18 IN RCP
Invert NE:	890.30	15 IN RCP

ST-31.3

Type	End Section - 15 IN	
Station	130+25 - 75.0' Lt	
Invert Elev.	892.50	15 IN RCP

ST-31.4

Type	Manhole 48 IN	
Station	129+75 - 31.5' Rt	
Grate/Casting Type	Curb	
Rim Elev.	897.86	
Base Elev.	888.60	
Riser	7.93 Ft	
Invert N:	888.85	18 IN RCP
Invert W:	890.72	15 IN RCP
Invert SE:	888.85	15 IN RCP

ST-31.5

Type	End Section - 15 IN	
Station	128+81 - 65.0' Rt	
Invert Elev.	891.00	15 IN RCP

ST-31.6

Type	Inlet	
Grate Style	Stool	
Station	130+21 - 58.0' Rt	
Rim Elev.	893.00	
Base Elev.	888.75	
'H' Distance	3.91 Ft	
Invert NW:	889.00	15 IN RCP

ST-32

Type	Manhole 96 IN	
Station	131+10 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	898.77	
Base Elev.	884.74	
Riser	11.61 Ft	
Invert S:	892.13	18 IN RCP
Invert E:	885.20	48 IN RCP
Invert W:	885.20	54 IN RCP

ST-32.1

Type	Manhole 48 IN	
Station	131+10 - 39.2' Rt	
Grate/Casting Type	Manhole	
Rim Elev.	898.30	
Base Elev.	891.99	
Riser	4.73 Ft	
Invert N:	892.24	18 IN RCP
Invert S:	892.24	18 IN CSP
Invert SE:	893.95	15 IN RCP

ST-32.2

Type	End Section - 15 IN	
Station	131+18 - 56.7' Rt	
Invert Elev.	894.00	15 IN RCP

ST-33

Type	Manhole 84 IN	
Station	133+75 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	898.34	
Base Elev.	884.94	
Riser	10.98 Ft	
Invert N:	888.35	18 IN RCP
Invert S:	890.61	15 IN RCP
Invert E:	885.36	42 IN RCP
Invert W:	885.36	48 IN RCP

ST-33.1

Type	Manhole 48 IN	
Station	133+75 - 13.0' Lt	
Grate/Casting Type	Curb	
Rim Elev.	898.12	
Base Elev.	888.19	
Riser	8.60 Ft	
Invert S:	888.44	18 IN RCP
Invert N:	888.44	18 IN RCP

ST-33.2

Type	Manhole 48 IN	
Station	133+75 - 41.0' Lt	
Grate/Casting Type	Stool	
Rim Elev.	896.20	
Base Elev.	888.23	
Riser	6.97 Ft	
Invert N:	888.48	18 IN RCP
Invert S:	888.48	18 IN RCP

ST-33.3

Type	Manhole 48 IN	
Station	133+75 - 70.6' Lt	
Grate/Casting Type	Stool	
Rim Elev.	894.55	
Base Elev.	888.30	
Riser	5.25 Ft	
Invert S:	888.55	18 IN RCP

ST-33.4

Type	Manhole 48 IN	
Grate Style	Stool	
Station	133+75 - 50.0' Rt	
Rim Elev.	894.75	
Base Elev.	890.50	
'H' Distance	3.25 Ft	
Invert E:	890.75	15 IN RCP
Invert N:	890.75	18 IN RCP

ST-33.5

Type	Inlet - Type 2	
Grate Style	Curb	
Station	133+99 - 59.1' Rt	
Rim Elev.	896.65	
Base Elev.	892.40	
'H' Distance	3.58 Ft	
Invert E:	892.65	15 IN RCP
Invert W:	892.65	15 IN RCP

ST-33.6

Type	Inlet - Type 2	
Grate Style	Curb	
Station	134+48 - 59.1' Rt	
Rim Elev.	896.61	
Base Elev.	892.54	
'H' Distance	3.40 Ft	
Invert W:	892.79	15 IN RCP

ST-34

Type	Manhole 72 IN	
Station	135+01 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	898.84	
Base Elev.	885.08	
Riser	11.34 Ft	
Invert S:	894.69	21 IN RCP
Invert E:	885.45	42 IN RCP
Invert W:	885.45	42 IN RCP

ST-34.1

Type	End Section - 21 IN	
Station	135+01 - 50.0' Rt	
Invert Elev.	894.80	21 IN RCP

ST-35

Type	Manhole 72 IN	
Station	137+20 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	899.72	
Base Elev.	885.23	
Riser	12.07 Ft	
Invert W:	885.60	42 IN RCP
Invert E:	885.60	36 IN RCP

ST-35.1

Type	End Section - 15 IN	
Station	137+40 - 50.0' Rt	
Invert Elev.	895.50	15 IN RCP

ST-36

Type	Manhole 60 IN	
Station	141+34 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	898.85	
Base Elev.	885.64	
Riser	10.79 Ft	
Invert NW:	890.83	18 IN RCP
Invert E:	885.97	36 IN RCP
Invert W:	885.97	36 IN RCP
Invert S:	891.13	15 IN RCP
Invert NE:	894.17	15 IN RCP

ST-36.1

Type	Manhole 48 IN	
Station	141+19 - 40.0' Lt	
Grate/Casting Type	Stool	
Rim Elev.	896.90	
Base Elev.	890.65	
Riser	5.25 Ft	
Invert SE:	890.90	18 IN RCP

ST-36.2

Type	Inlet - Type 2	
Grate Style	Curb	
Station	141+44 - 31.4' Lt	
Rim Elev.	898.23	
Base Elev.	893.98	
'H' Distance	3.58 Ft	
Invert SW:	894.23	15 IN RCP

ST-36.3

Type	Inlet	
Grate Style	Stool	
Station	141+25 - 42.0' Rt	
Rim Elev.	896.32	
Base Elev.	892.07	
'H' Distance	3.91 Ft	
Invert E:	892.32	15 IN RCP

ST-36.4

Type	Inlet - Type 2	
Grate Style	Curb	
Station	141+47 - 40.9' Rt	
Rim Elev.	898.20	
Base Elev.	893.95	
'H' Distance	3.58 Ft	
Invert W:	894.20	15 IN RCP
Invert E:	894.20	15 IN RCP

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12TH AVENUE NORTH RECONSTRUCTION

INLET & MANHOLE SUMMARY

INLET & MANHOLE SUMMARY

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ST-36.5

Type	Inlet - Type 2	
Grate Style	Curb	
Station	142+08 - 40.9' Rt	
Rim Elev.	897.74	
Base Elev.	894.12	
'H' Distance	2.95 Ft	
Invert W:	894.37	15 IN RCP

ST-37

Type	Manhole 60 IN	
Station	143+00 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	898.24	
Base Elev.	885.79	
Riser	10.03 Ft	
Invert N:	892.97	15 IN RCP
Invert S:	891.81	15 IN RCP
Invert E:	886.12	36 IN RCP
Invert W:	886.12	36 IN RCP

ST-37.1

Type	Manhole 48 IN	
Grate Style	Curb	
Station	143+00 - 21.5' Lt	
Rim Elev.	898.02	
Base Elev.	892.80	
'H' Distance	3.89 Ft	
Invert N:	893.05	15 IN RCP
Invert S:	893.05	15 IN RCP

ST-37.2

Type	Inlet	
Grate Style	Stool	
Station	142+94 - 38.0' Lt	
Rim Elev.	897.10	
Base Elev.	892.85	
'H' Distance	3.91 Ft	
Invert S:	893.10	15 IN RCP

ST-37.3

Type	Inlet	
Grate Style	Stool	
Station	142+64 - 72.6' Lt	
Rim Elev.	897.00	
Base Elev.	892.98	
'H' Distance	3.68 Ft	
Invert SE:	893.23	15 IN RCP

ST-37.4

Type	Manhole 48 IN	
Station	143+00 - 21.5' Rt	
Grate/Casting Type	Curb	
Rim Elev.	898.02	
Base Elev.	891.90	
Riser	4.79 Ft	
Invert SW:	892.15	15 IN RCP
Invert N:	892.15	15 IN RCP

ST-37.5

Type	Inlet	
Grate Style	Stool	
Station	142+53 - 48.0' Rt	
Rim Elev.	896.30	
Base Elev.	892.05	
'H' Distance	3.91 Ft	
Invert NE:	892.30	15 IN RCP

ST-38

Type	Manhole 60 IN	
Station	145+51 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	899.50	
Base Elev.	886.02	
Riser	11.06 Ft	
Invert N:	894.03	15 IN RCP
Invert E:	886.35	30 IN RCP
Invert W:	886.35	36 IN RCP

ST-38.1

Type	Inlet	
Grate Style	Stool	
Station	145+51 - 74.6' Lt	
Rim Elev.	898.20	
Base Elev.	893.95	
'H' Distance	3.91 Ft	
Invert S:	894.20	15 IN RCP

ST-39

Type	Manhole 60 IN	
Station	146+00 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	899.74	
Base Elev.	886.11	
Riser	11.21 Ft	
Invert S:	892.67	18 IN RCP
Invert E:	886.40	30 IN RCP
Invert W:	886.40	30 IN RCP

ST-39.1

Type	Inlet	
Grate Style	Stool	
Station	146+00 - 48.0' Rt	
Rim Elev.	896.80	
Base Elev.	892.55	
'H' Distance	3.91 Ft	
Invert N:	892.80	18 IN RCP

ST-40

Type	Manhole 60 IN	
Station	149+70 - 13.0' Lt	
Grate/Casting Type	Floating	
Rim Elev.	904.00	
Base Elev.	886.52	
Riser	15.06 Ft	
Invert S:	889.59	21 IN RCP
Invert N:	889.63	21 IN RCP
Invert E:	886.81	27 IN RCP
Invert W:	886.81	30 IN RCP

ST-40.1

Type	Manhole 48 IN	
Station	5+31 - 0.0'	
Grate/Casting Type	Stool	
Rim Elev.	898.75	
Base Elev.	889.75	
Riser	8.00 Ft	
Invert E:	894.75	18 IN RCP
Invert S:	890.00	21 IN RCP

ST-40.2

Type	Manhole 48 IN	
Station	5+35 - 28.5' Rt	
Grate/Casting Type	Curb	
Rim Elev.	902.59	
Base Elev.	894.56	
Riser	6.70 Ft	
Invert E:	898.24	18 IN RCP
Invert W:	894.81	18 IN RCP

ST-40.3

Type	Inlet - Type 2	
Grate Style	Curb	
Station	5+39 - 63.4' Rt	
Rim Elev.	902.59	
Base Elev.	898.34	
'H' Distance	3.58 Ft	
Invert E:	898.75	18 IN RCP
Invert W:	898.59	18 IN RCP

ST-40.4

Type	End Section - 15 IN	
Station	5+41 - 81.2' Rt	
Invert Elev.	898.80	15 IN RCP

ST-40.5

Type	Manhole 48 IN	
Station	0+97 - 0.0'	
Grate/Casting Type	Stool	
Rim Elev.	896.71	
Base Elev.	889.75	
Riser	5.96 Ft	
Invert E:	894.00	18 IN RCP
Invert N:	890.00	21 IN RCP

ST-40.6

Type	Manhole 48 IN	
Station	0+97 - 17.0' Rt	
Grate/Casting Type	Curb	
Rim Elev.	902.54	
Base Elev.	893.79	
Riser	7.42 Ft	
Invert E:	897.36	18 IN RCP
Invert W:	894.04	18 IN RCP

ST-40.7

Type	Manhole 48 IN	
Station	0+97 - 50.0' Rt	
Grate/Casting Type	Curb	
Rim Elev.	902.35	
Base Elev.	897.44	
Riser	3.58 Ft	
Invert E:	897.69	15 IN RCP
Invert W:	897.69	18 IN RCP

ST-40.8

Type	End Section - 15 IN	
Station	0+98 - 70.8' Rt	
Invert Elev.	897.75	15 IN RCP

ST-41

Type	Manhole 60 IN	
Station	154+00 - 0.0'	
Grate/Casting Type	Floating	
Rim Elev.	900.40	
Base Elev.	887.10	
Riser	10.88 Ft	
Invert S:	895.70	15 IN RCP
Invert N:	893.70	15 IN RCP
Invert E:	887.37	27 IN RCP
Invert W:	887.37	27 IN RCP

ST-41.1

Type	Inlet - Type 2 Double	
Station	154+00 - 21.5' Lt	
Grate/Casting Type	Curb	
Rim Elev.	899.92	
Base Elev.	892.92	
Riser	5.67 Ft	
Invert N:	893.92	15 IN RCP
Invert S:	893.92	18 IN RCP

ST-41.2

Type	Inlet	
Grate Style	Stool	
Station	154+00 - 56.3' Lt	
Rim Elev.	897.25	
Base Elev.	893.77	
'H' Distance	3.14 Ft	
Invert S:	894.02	15 IN RCP

ST-41.3

Type	Inlet - Type 2 Double	
Grate Style	Curb	
Station	154+00 - 21.5' Rt	
Rim Elev.	899.92	
Base Elev.	895.67	
'H' Distance	3.58 Ft	
Invert N:	895.92	15 IN RCP

ST-42

Type	Manhole 60 IN	
Station	156+32 - 0.0'	
Grate/Casting Type	Floating	
Rim Elev.	901.56	
Base Elev.	887.40	
Riser	11.74 Ft	
Invert S:	896.56	15 IN RCP
Invert E:	887.67	21 IN RCP
Invert W:	887.67	27 IN RCP

ST-42.1

Type	End Section - 15 IN	
Station	156+32 - 68.0' Rt	
Invert Elev.	896.75	15 IN RCP

ST-43

Type	Manhole 48 IN	
Station	159+65 - 0.0'	
Grate/Casting Type	Floating	
Rim Elev.	900.31	
Base Elev.	888.02	
Riser	10.04 Ft	
Invert S:	895.31	15 IN RCP
Invert E:	888.27	21 IN RCP
Invert W:	888.27	21 IN RCP

ST-43.1

Type	End Section - 15 IN	
Station	159+65 - 68.4' Rt	
Invert Elev.	895.50	15 IN RCP

ST-44

Type	Manhole 48 IN	
Station	162+60 - 0.0'	
Grate/Casting Type	Floating	
Rim Elev.	898.72	
Base Elev.	888.55	
Riser	7.92 Ft	
Invert S:	893.73	15 IN RCP
Invert N:	892.02	18 IN RCP
Invert E:	888.80	21 IN RCP
Invert W:	888.80	21 IN RCP

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12TH AVENUE NORTH RECONSTRUCTION

INLET & MANHOLE SUMMARY

INLET & MANHOLE SUMMARY

FILE LOCATION: R:\Civil 3D Projects\16843\DRAWINGS\DESIGN\16843-COVER-NOTES.dwg

12/11/2014 10:36:32 AM

ST-44.1

Type	Inlet - Type 2 Double	
Station	162+60 - 21.5' Lt	
Grate/Casting Type	Curb	
Rim Elev.	898.24	
Base Elev.	891.99	
Riser	4.92 Ft	
Invert N:	892.24	15 IN RCP
Invert S:	892.24	18 IN RCP

ST-44.2

Type	Inlet	
Grate Style	Stool	
Station	162+69 - 56.3' Lt	
Rim Elev.	895.30	
Base Elev.	892.09	
'H' Distance	2.87 Ft	
Invert S:	892.34	15 IN RCP

ST-44.3

Type	Inlet - Type 2 Double	
Grate Style	Curb	
Station	162+60 - 21.5' Rt	
Rim Elev.	898.24	
Base Elev.	893.70	
'H' Distance	3.87 Ft	
Invert N:	893.95	15 IN RCP
Invert SE:	893.95	15 IN RCP

ST-44.4

Type	Inlet	
Grate Style	Stool	
Station	162+76 - 32.8' Rt	
Rim Elev.	898.00	
Base Elev.	893.75	
'H' Distance	3.91 Ft	
Invert NW:	894.00	15 IN RCP

ST-45

Type	Manhole 48 IN	
Station	163+40 - 0.0'	
Grate/Casting Type	Floating	
Rim Elev.	898.96	
Base Elev.	888.69	
Riser	8.02 Ft	
Invert S:	896.33	15 IN RCP
Invert E:	888.94	21 IN RCP
Invert W:	888.94	21 IN RCP

ST-45.1

Type	End Section - 15 IN	
Station	163+40 - 60.0' Rt	
Invert Elev.	896.50	15 IN RCP

ST-47

Type	Manhole 60 IN	
Station	165+76 - 0.0'	
Grate/Casting Type	Floating	
Rim Elev.	899.50	
Base Elev.	889.12	
Riser	7.96 Ft	
Invert S:	889.37	21 IN RCP
Invert E:	889.44	21 IN RCP
Invert W:	889.37	21 IN RCP
Invert N:	892.12	18 IN RCP

ST-47.1

Type	Manhole 48 IN	
Grate Style	Curb	
Station	165+57 - 62.0' Lt	
Rim Elev.	897.72	
Base Elev.	892.01	
'H' Distance	3.46 Ft	
Invert E:	892.26	15 IN RCP
Invert S:	892.26	18 IN RCP
Invert W:	892.37	15 IN RCP

ST-47.2

Type	Manhole 48 IN	
Grate Style	Curb	
Station	165+96 - 62.0' Lt	
Rim Elev.	897.72	
Base Elev.	892.12	
'H' Distance	3.35 Ft	
Invert W:	892.37	15 IN RCP
Invert E:	892.37	15 IN RCP

ST-47.3

Type	Manhole 48 IN	
Station	165+76 - 64.0' Rt	
Grate/Casting Type	Manhole	
Rim Elev.	896.00	
Base Elev.	889.24	
Riser	5.18 Ft	
Invert N:	889.49	21 IN RCP

ST-47.4

Type	Inlet	
Grate Style	Stool	
Station	165+10 - 70.0' Lt	
Rim Elev.	896.50	
Base Elev.	892.25	
'H' Distance	3.91 Ft	
Invert E:	892.50	15 IN RCP

ST-47.5

Type	Inlet	
Grate Style	Stool	
Station	166+43 - 70.0' Lt	
Rim Elev.	896.50	
Base Elev.	892.25	
'H' Distance	3.91 Ft	
Invert W:	892.50	15 IN RCP

ST-49

Type	Manhole 48 IN	
Station	167+66 - 0.0'	
Grate/Casting Type	Floating	
Rim Elev.	898.82	
Base Elev.	889.58	
Riser	6.99 Ft	
Invert S:	893.73	18 IN RCP
Invert N:	892.12	18 IN RCP
Invert E:	889.83	15 IN RCP
Invert W:	889.83	21 IN RCP

ST-49.1

Type	Inlet - Type 2 Double	
Grate Style	Curb	
Station	167+66 -21.5' Lt	
Rim Elev.	898.34	
Base Elev.	892.09	
'H' Distance	5.58 Ft	
Invert S:	892.34	18 IN RCP
Invert NE:	892.34	15 IN RCP

ST-49.2

Type	Inlet	
Grate Style	Stool	
Station	167+89 - 56.3' Lt	
Rim Elev.	895.60	
Base Elev.	892.21	
'H' Distance	3.05 Ft	
Invert SW:	892.46	18 IN RCP

ST-49.3

Type	Inlet - Type 2 Double	
Grate Style	Curb	
Station	167+66 - 21.5' Rt	
Rim Elev.	898.34	
Base Elev.	893.70	
'H' Distance	3.97 Ft	
Invert N:	893.95	18 IN RCP
Invert SW:	893.95	15 IN RCP

ST-49.4

Type	Inlet	
Grate Style	Stool	
Station	167+53 - 32.8' Rt	
Rim Elev.	898.00	
Base Elev.	893.75	
'H' Distance	3.91 Ft	
Invert NE:	894.00	18 IN RCP

ST-50

Type	Manhole 48 IN	
Station	171+06 - 0.0'	
Grate/Casting Type	Floating	
Rim Elev.	901.81	
Base Elev.	890.53	
Riser	9.03 Ft	
Invert S:	894.53	15 IN RCP
Invert N:	890.78	15 IN RCP
Invert E:	893.33	15 IN RCP
Invert W:	890.78	15 IN RCP

ST-50.1

Type	Inlet	
Grate Style	Stool	
Station	171+06 - 77.7' Lt	
Rim Elev.	895.00	
Base Elev.	890.75	
'H' Distance	3.91 Ft	
Invert S:	891.00	15 IN RCP

ST-50.2

Type	End Section - 15 IN	
Station	171+06 - 77.8' Rt	
Invert Elev.	894.75	15 IN RCP

ST-51

Type	Manhole 48 IN	
Station	174+36 - 0.0'	
Grate/Casting Type	Floating	
Rim Elev.	905.11	
Base Elev.	894.00	
Riser	8.86 Ft	
Invert S:	895.00	15 IN RCP
Invert W:	894.25	15 IN RCP
Invert N:	894.25	15 IN RCP

ST-51.1

Type	End Section - 15 IN w/ Trash Rack	
Station	174+36 - 89.2' Lt	
Invert Elev.	894.50	15 IN RCP

ST-51.2

Type	End Section - 15 IN	
Station	174+36 - 89.0' Rt	
Invert Elev.	895.25	15 IN RCP

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12TH AVENUE NORTH RECONSTRUCTION

INLET & MANHOLE SUMMARY

INLET & MANHOLE SUMMARY

FILE LOCATION: R:\Civil 3D Projects\16843\DRAWINGS\DESIGN\16843-COVER-NOTES.dwg

7/17/2015 12:20:47 PM

ST - 80

Type:	Manhole 48 IN	
Grate/Casting Type:	Floating	
Station:	176+55.59 - 0.00 ' Rt	
Rim Elev:	905.37	
Base Elev:	893.23	
Riser	9.90 ft	
Invert E:	893.48	18 IN RCP
Invert N:	893.48	18 IN RCP

ST - 80.1

Type:	Manhole 48 IN	
Grate/Casting Type:	Manhole	
Station:	176+55.59 - 28.00' Lt	
Rim Elev:	905.13	
Base Elev:	893.51	
Riser	10.00 ft	
Invert N:	893.81	18 IN RCP
Invert S:	893.76	18 IN RCP
Invert E:	893.76	15 IN RCP

ST - 80.2

Type:	End Section - 18 IN w/ trash rack
Station:	176+55.59 - 90.62' Lt
Invert Elev:	894.13

ST - 80.3

Type:	Manhole 48 IN	
Grate/Casting Type:	Manhole	
Station:	177+24.93 - 28.00' Lt	
Rim Elev:	904.73	
Base Elev:	894.20	
Riser	8.90 ft	
Invert N:	894.45	12 IN RCP
Invert W:	894.45	15 IN RCP

ST - 80.4

Type:	End Section - 12 in w/ trash rack
Station:	177+24.77 - 87.68' Lt
Invert Elev:	894.96

ST - 81

Type:	Manhole 48 IN	
Grate/Casting Type:	Floating	
Station:	179+31.29 - 0.00 ' Rt	
Rim Elev:	902.55	
Base Elev:	892.99	
Riser	7.30 ft	
Invert E:	893.24	18 IN RCP
Invert S:	893.48	15 IN RCP
Invert N:	893.24	15 IN RCP
Invert W:	893.24	18 IN RCP

ST - 81.1

Type:	Inlet - Type 2	
Grate Style:	V	
Station:	179+33.00 - 21.50' Lt	
Grate Elev:	901.96	
Base Elev:	893.21	
"H" Distance:	8.10 ft	
Invert S:	893.46	15 IN RCP
Invert N:	893.46	12 IN RCP

ST - 81.2

Type:	Inlet	
Grate Style:	Stool Grate	
Station:	179+33.00	32.75' Lt
Grate Elev:	901.82	
Base Elev:	893.32	
"H" Distance:	7.60 ft	
Invert S:	893.57	12 IN RCP
Invert N:	893.57	12 IN RCP

ST - 81.3

Type:	End Section - 12 IN w/ trash rack
Station:	179+33.00 - 81.53' Lt
Invert Elev:	894.06

ST - 81.4

Type:	Inlet - Type 2	
Grate Style:	V	
Station:	179+33.00 - 21.50' Rt	
Grate Elev:	901.96	
Base Elev:	893.45	
"H" Distance:	7.80 ft	
Invert S:	893.95	12 IN RCP
Invert N:	893.70	15 IN RCP

ST - 81.5

Type:	Inlet	
Grate Style:	Stool Grate	
Station:	179+33.00 - 38.69' Rt	
Grate Elev:	900.34	
Base Elev:	893.87	
"H" Distance:	5.50 ft	
Invert N:	894.12	12 IN RCP

ST - 82

Type:	Manhole 48 IN	
Grate/Casting Type:	Floating	
Station:	182+89.71 - 0.00 ' Rt	
Rim Elev:	898.44	
Base Elev:	892.66	
Riser	3.50 ft	
Invert W:	892.91	18 IN RCP
Invert E:	892.91	24 IN RCP
Invert N:	893.53	15 IN RCP
Invert S:	892.91	15 IN RCP

ST - 82.1

Type:	Inlet - Type 2 Double	
Grate Style:	V	
Station:	182+89.71 - 21.50' Lt	
Grate Elev:	897.87	
Base Elev:	893.49	
"H" Distance:	3.70 ft	
Invert S:	893.74	15 IN RCP
Invert N:	893.74	12 IN RCP

ST - 82.2

Type:	Inlet	
Grate Style:	Stool Grate	
Station:	182+89.71 - 32.75' Lt	
Grate Elev:	897.72	
Base Elev:	893.61	
"H" Distance:	3.20 ft	
Invert S:	893.86	12 IN RCP
Invert N:	893.86	12 IN RCP

ST - 82.3

Type:	End Section - 12 IN w/ trash rack
Station:	182+89.71 - 59.04' Lt
Invert Elev:	894.12

ST - 82.4

Type:	Inlet - Type 2 Double	
Grate Style:	V	
Station:	182+89.71 - 21.50' Rt	
Grate Elev:	897.87	
Base Elev:	892.87	
"H" Distance:	4.30 ft	
Invert S:	893.12	12 IN RCP
Invert N:	893.12	15 IN RCP

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12TH AVENUE NORTH RECONSTRUCTION

STORM SEWER

DRAINAGE SUMMARY SHEET

7/21/2015 9:02:40 AM Mike Johnson T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\050\050_MH_INLET_SUMMARY.dwg

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	50	9

Apex Engineering Group

ST - 82.5

Type:	Inlet	
Grate Style:	Stool Grate	
Station:	182+89.71 -	37.39' Rt
Grate Elev:	896.79	
Base Elev:	892.87	
"H" Distance:	3.00 ft	
Invert N:	893.28	12 IN RCP

ST - 83

Type:	Manhole 48 IN	
Grate/Casting Type:	Floating	
Station:	185+59.29 -	0.00 ' Rt
Rim Elev:	898.91	
Base Elev:	892.42	
Riser	4.20 ft	
Invert W:	892.67	24 IN RCP
Invert E:	892.67	24 IN RCP

ST - 84

Type:	Manhole 48 IN	
Grate/Casting Type:	Floating	
Station:	188+00.00 -	0.00 ' Rt
Rim Elev:	897.70	
Base Elev:	892.21	
Riser	3.40 ft	
Invert W:	892.46	24 IN RCP
Invert E:	892.46	24 IN RCP
Invert N:	892.46	15 IN RCP
Invert S:	892.46	15 IN RCP

ST - 84.1

Type:	Inlet - Type 2 Double	
Grate Style:	V	
Station:	188+00.00 -	21.50' Lt
Grate Elev:	897.13	
Base Elev:	892.43	
"H" Distance:	4.00 ft	
Invert S:	892.68	15 IN RCP
Invert N:	892.68	12 IN RCP

ST - 84.2

Type:	Inlet	
Grate Style:	Stool Grate	
Station:	188+00.00 -	32.75' Lt
Grate Elev:	896.99	
Base Elev:	892.54	
"H" Distance:	3.50 ft	
Invert S:	892.79	12 IN RCP

ST - 84.3

Type:	Inlet - Type 2 Double	
Grate Style:	V	
Station:	188+00.00 -	21.50' Rt
Grate Elev:	897.13	
Base Elev:	892.42	
"H" Distance:	4.00 ft	
Invert S:	892.67	12 IN RCP
Invert N:	892.67	15 IN RCP

ST - 84.4

Type:	Inlet	
Grate Style:	Stool Grate	
Station:	188+00.00 -	38.00' Rt
Grate Elev:	896.41	
Base Elev:	892.49	
"H" Distance:	3.00 ft	
Invert N:	892.84	12 IN RCP

ST - 85

Type:	Manhole 48 IN	
Grate/Casting Type:	Floating	
Station:	191+59.38 -	0.00 ' Rt
Rim Elev:	898.61	
Base Elev:	891.88	
Riser	4.50 ft	
Invert W:	892.13	24 IN RCP
Invert E:	892.13	24 IN RCP

ST - 86

Type:	Manhole 60 IN	
Grate/Casting Type:	Floating	
Station:	193+93.18 -	0.00 ' Rt
Rim Elev:	897.61	
Base Elev:	891.65	
Riser	3.70 ft	
Invert W:	891.92	24 IN RCP
Invert E:	891.92	27 IN RCP
Invert N:	891.92	15 IN RCP
Invert S:	891.92	15 IN RCP

ST - 86.1

Type:	Inlet - Type 2 Double	
Grate Style:	V	
Station:	193+93.18 -	21.50' Lt
Grate Elev:	897.04	
Base Elev:	891.89	
"H" Distance:	4.50 ft	
Invert S:	892.14	15 IN RCP
Invert N:	892.14	12 IN RCP

ST - 86.2

Type:	Inlet	
Grate Style:	Stool Grate	
Station:	193+93.18 -	32.75' Lt
Grate Elev:	896.90	
Base Elev:	892.00	
"H" Distance:	4.00 ft	
Invert S:	892.25	12 IN RCP

ST - 86.3

Type:	Inlet - Type 2 Double	
Grate Style:	V	
Station:	193+93.18 -	21.50' Rt
Grate Elev:	897.04	
Base Elev:	891.89	
"H" Distance:	4.50 ft	
Invert S:	892.14	12 IN RCP
Invert N:	892.14	15 IN RCP

ST - 86.4

Type:	Inlet	
Grate Style:	Stool Grate	
Station:	193+93.18 -	37.38' Rt
Grate Elev:	896.44	
Base Elev:	892.04	
"H" Distance:	3.50 ft	
Invert N:	892.29	12 IN RCP

ST - 87

Type:	Manhole 60 IN	
Grate/Casting Type:	Floating	
Station:	197+30.00 -	0.00 ' Rt
Rim Elev:	899.06	
Base Elev:	891.25	
Riser	5.40 ft	
Invert W:	891.52	27 IN RCP
Invert E:	891.52	27 IN RCP
Invert S:	893.27	15 IN RCP

ST - 87.1

Type:	Manhole 48 IN	
Grate/Casting Type:	Manhole	
Station:	197+30.00 -	76.88 ' Rt
Rim Elev:	899.61	
Base Elev:	893.79	
Riser	4.20 ft	
Invert N:	894.04	15 IN RCP
Invert SW:	894.12	12 IN CSP (EXIST)

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12TH AVENUE NORTH RECONSTRUCTION

STORM SEWER

DRAINAGE SUMMARY SHEET

7/21/2015 9:02:16 AM Mike Johnson T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\050\050_MH_INLET_SUMMARY.dwg

ST - 88

Type:	Manhole 60 IN	
Grate/Casting Type:	Floating	
Station:	198+84.78 -	0.00 ' Rt
Rim Elev:	898.53	
Base Elev:	891.06	
Riser	5.10 ft	
Invert W:	891.33	27 IN RCP
Invert E:	891.33	27 IN RCP
Invert S:	891.33	15 IN RCP
Invert N:	892.29	15 IN RCP

ST - 88.1

Type:	Inlet - Type 2 Double	
Grate Style:	V	
Station:	198+84.78 -	21.50' Lt
Grate Elev:	897.96	
Base Elev:	892.26	
"H" Distance:	5.00 ft	
Invert S:	892.51	15 IN RCP
Invert N:	892.76	12 IN RCP

ST - 88.2

Type:	Inlet	
Grate Style:	Stool Grate	
Station:	198+84.78 -	32.75' Lt
Grate Elev:	897.82	
Base Elev:	892.62	
"H" Distance:	4.30 ft	
Invert S:	892.87	12 IN RCP

ST - 88.3

Type:	Inlet - Type 2 Double	
Grate Style:	V	
Station:	198+84.78 -	21.90' Rt
Grate Elev:	897.96	
Base Elev:	891.30	
"H" Distance:	6.00 ft	
Invert S:	891.55	12 IN RCP
Invert N:	891.55	15 IN RCP

ST - 88.4

Type:	Inlet	
Grate Style:	Stool Grate	
Station:	198+84.86 -	49.35' Rt
Grate Elev:	896.83	
Base Elev:	891.57	
"H" Distance:	4.30 ft	
Invert N:	891.82	12 IN RCP

ST - 89

Type:	Manhole 60 IN	
Grate/Casting Type:	Floating	
Station:	201+91.67 -	0.00 ' Rt
Rim Elev:	900.44	
Base Elev:	890.69	
Riser	7.30 ft	
Invert W:	890.96	27 IN RCP
Invert N:	890.96	27 IN RCP
Invert S:	893.09	24 IN RCP

ST - 89.1

Type:	Manhole 60 IN	
Grate/Casting Type:	Manhole	
Station:	201+90.98 -	53.78 ' Lt
Rim Elev:	899.85	
Base Elev:	890.57	
Riser	7.50 ft	
Invert S:	890.90	27 IN RCP
Invert NW:	892.00	24 IN RCP
Invert E:	890.86	30 IN RCP (EXIST)

ST - 89.2

Type:	End Section - 24 IN w/ trash rack	
Station:	201+75.22 -	75.36' Lt
Invert Elev:	893.09	

ST - 89.3

Type:	End Section - 24 IN w/ trash rack	
Station:	202+10.11 -	80.11' Rt
Invert Elev:	893.91	

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12TH AVENUE NORTH RECONSTRUCTION

STORM SEWER

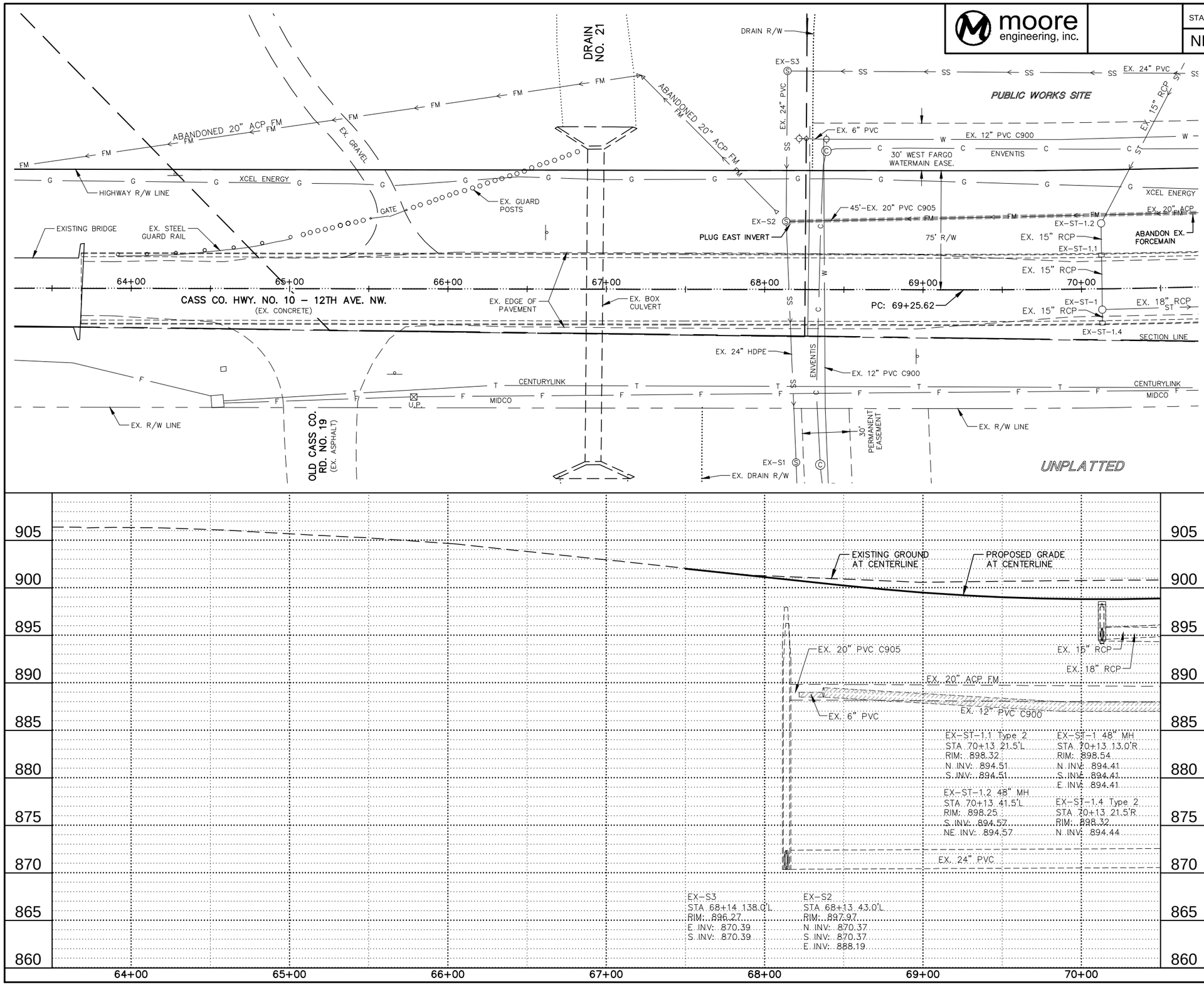
DRAINAGE SUMMARY SHEET

1/5/2015 4:22:46 PM Dave Wood T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\050\050_MH_INLET_SUMMARY.dwg

FILE LOCATION: R:\Civil 3D Projects\16843\DRAWINGS\DESIGN\16843-PP.dwg

moore engineering, inc.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	55	1



910 570 MODIFY MANHOLE
EX-S2 (Sta 68+13, 43.0' L) 1 EA

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Scale in Feet

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12TH AVENUE NORTH RECONSTRUCTION

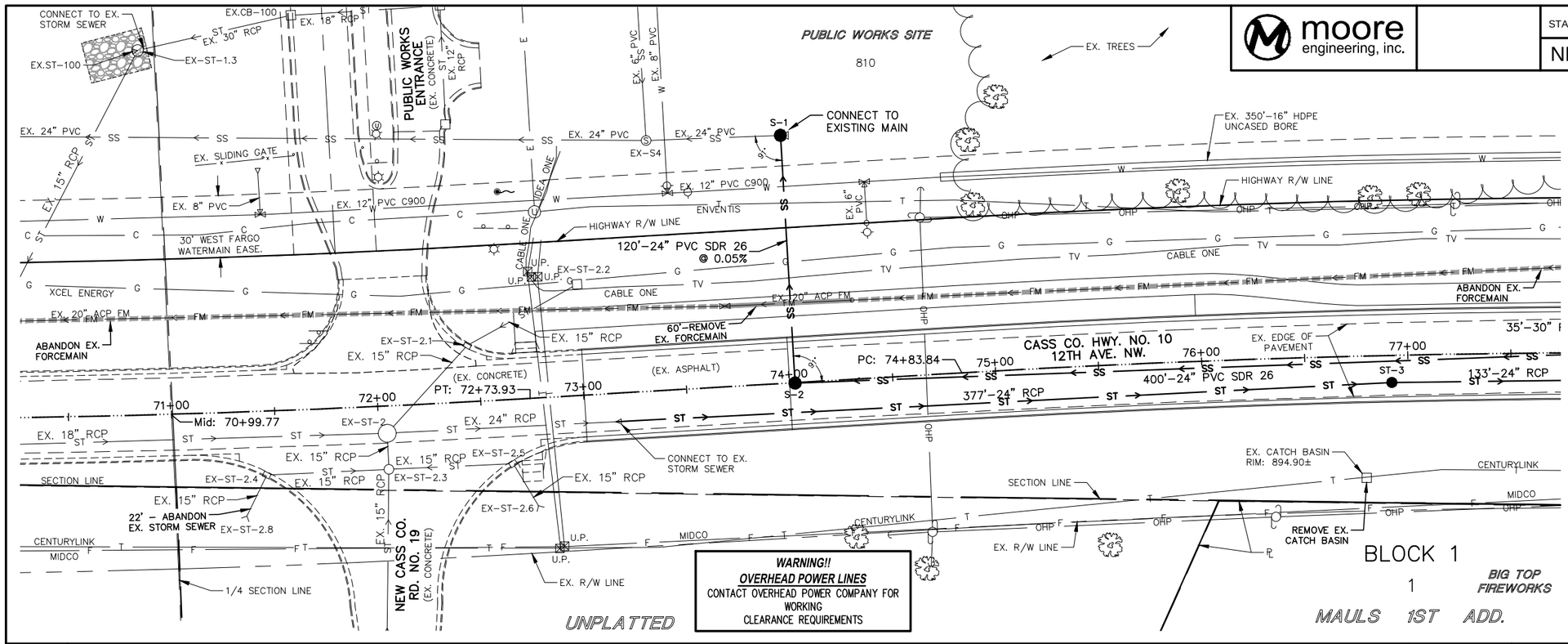
DRAINAGE LAYOUTS

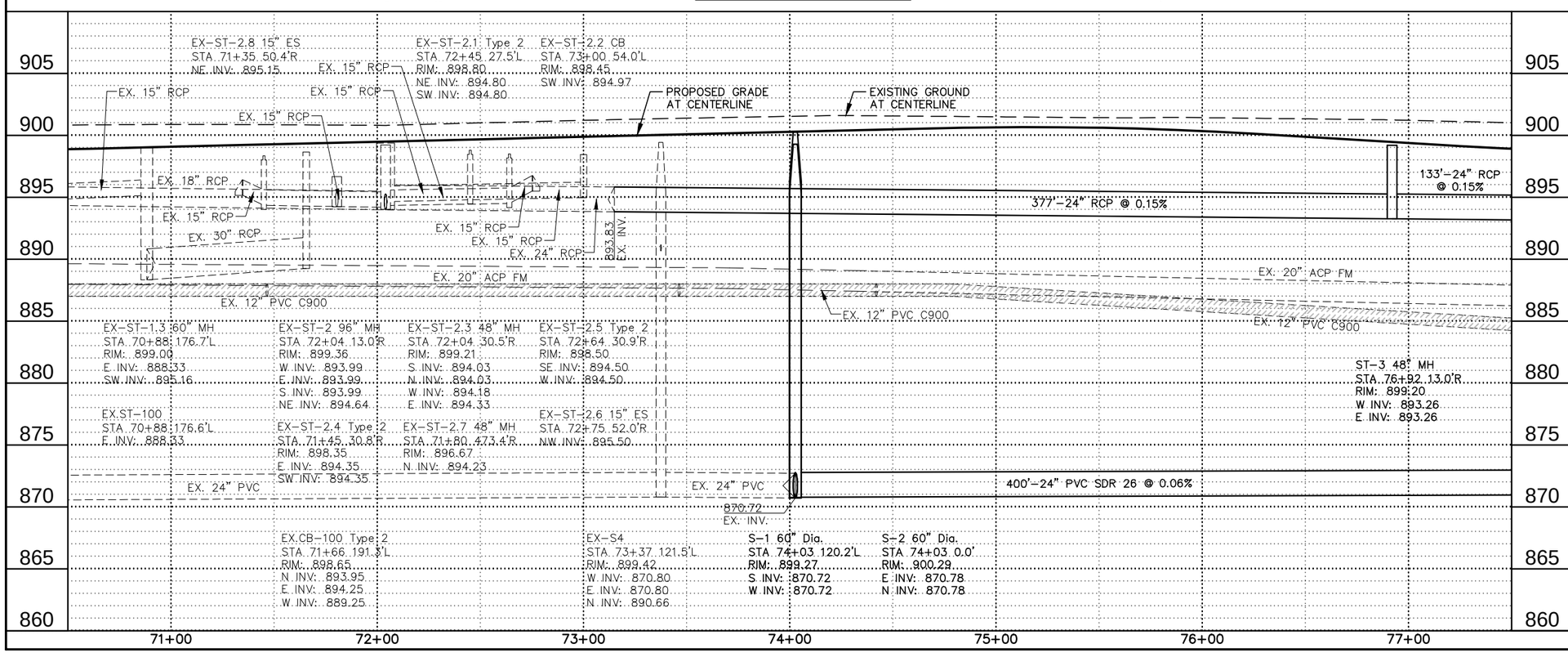
STA 63+50 - 70+50

FILE LOCATION: R:\Civil 3D Projects\16843\DRAWINGS\DESIGN\16843-PP.dwg

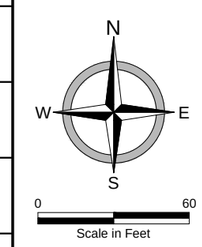
moore engineering, inc.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	55	2





714 620 PIPE CONC REINF 24IN CL III-STORM DRAIN	
Sta 73+15	435 LF
722 100 MANHOLE 48IN	
ST-3 (Sta 76+92, 13.0' R)	1 EA
722 2500 MANHOLE SPECIAL	
S-1 (Sta 74+03, 120.2' L) & S-2 (Sta 74+03, 0.0')	1 EA & 1 EA
724 944 CONNECTION TO EXISTING MAIN	
S-1 (Sta 74+03, 120.2'L)	1 EA
724 1125 24IN SANITARY SEWER PIPE	
S-1 - S-2 & S-2 - Sta 77+50	120 LF & 347 LF



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12TH AVENUE NORTH RECONSTRUCTION

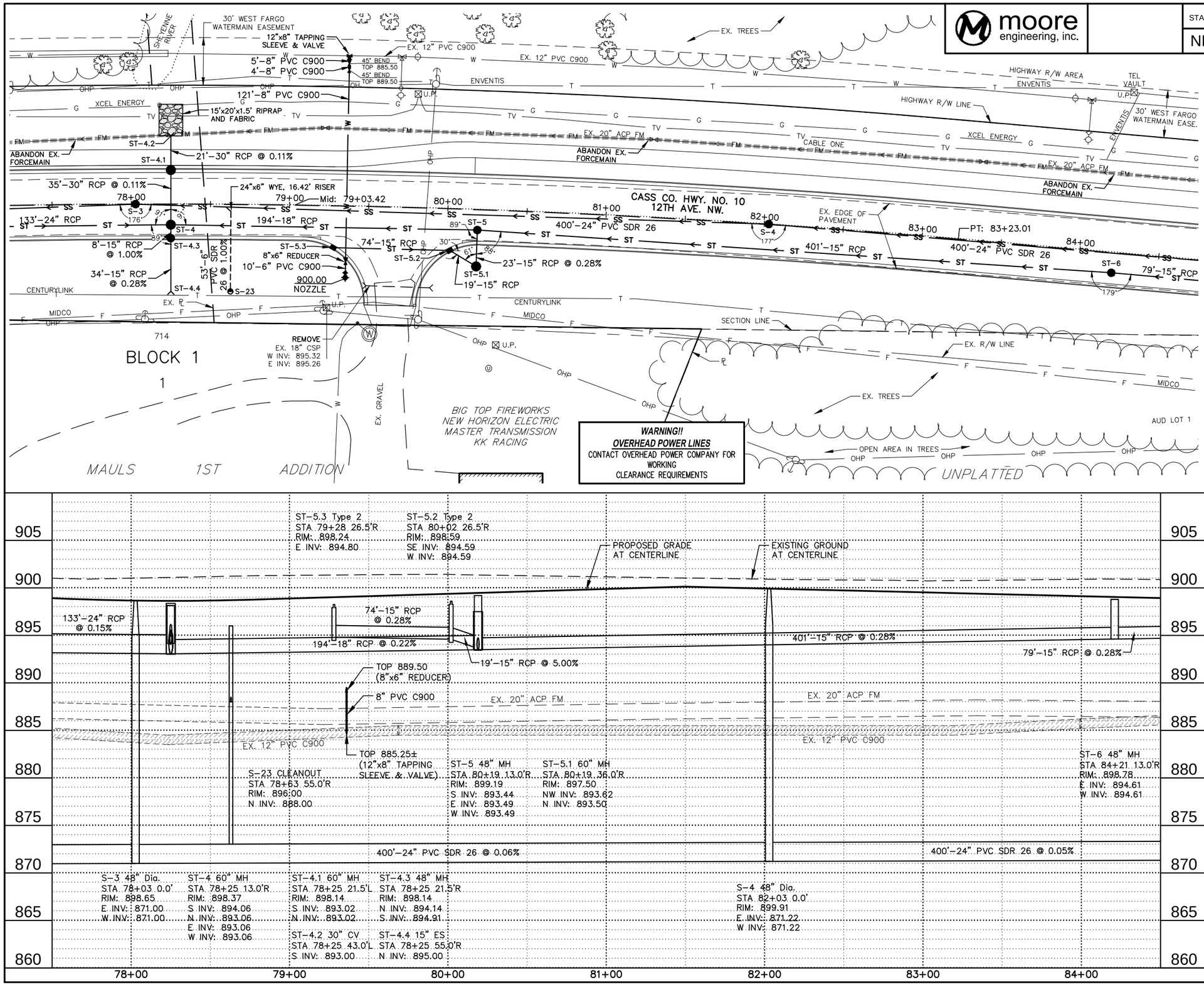
DRAINAGE LAYOUTS

STA 70+50 - 77+50

FILE LOCATION: R:\Civil 3D Projects\16843\DRAWINGS\DESIGN\16843-PP.dwg

moore engineering, inc.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	55	3



256 100 RIPRAP GRADE I

Sta 78+23, 38.0' L	16.7 CY

714 210 PIPE CONC REINF 15IN CL III-STORM DRAIN

ST-4 - ST-4.3	8 LF
ST-4.3 - ST-4.4	34 LF
ST-5 - ST-5.1 & ST-5.1 - ST-5.3	23 LF & 93 LF
ST-5 - Sta 84+50	430 LF

714 315 PIPE CONC REINF 18IN CL III-STORM DRAIN

ST-4 - ST-5	194 LF

714 620 PIPE CONC REINF 24IN CL III-STORM DRAIN

Sta 77+50 - ST-5	75 LF

714 825 PIPE CONC REINF 30IN CL III-STORM DRAIN

ST-4 - ST-4.2	56 LF

714 3005 END SECT-CONC REINF 15IN

ST-4.4 (Sta 78+25, 55.0' R)	1 EA

714 5825 END SECT-CORR STEEL .079IN 30IN

ST-4.2 (Sta 78+25, 43.0' L)	1 EA

714 7040 SANITARY SEWER SERVICE CONNECTION

Sta 78+63	1 EA

722 100 MANHOLE 48IN

ST-4.3 (Sta 78+25, 21.5' R) & ST-6 (Sta 84+21, 13.0' R)	1 EA & 1 EA
ST-5 (Sta 80+19, 13.0' R)	1 EA

722 110 MANHOLE 60IN

ST-4.1 (Sta 78+25, 21.5' L) & ST-5.1 (Sta 80+19, 36.0' R)	1 EA & 1 EA
ST-4 (Sta 78+25, 13.0' R)	1 EA

722 300 MANHOLE SANITARY

S-3 (Sta 78+03, 0.0') & S-4 (Sta 82+03, 0.0')	1 EA & 1 EA

722 3510 INLET TYPE 2

ST-5.2 (Sta 80+02, 26.5' R) & ST-5.3 (Sta 79+28, 26.5' R)	1 EA & 1 EA

724 1120 6IN SEWER SERVICE PIPE

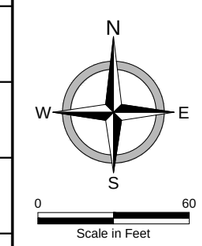
Sta 78+63 - S-23	69.42 LF

724 1125 24IN SANITARY SEWER PIPE

Sta 77+50 - 84+50	700 LF

990 400 PIPE CLEANOUT

S-23 (Sta 78+63, 55.0' R)	1 EA



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12TH AVENUE NORTH RECONSTRUCTION

DRAINAGE LAYOUTS

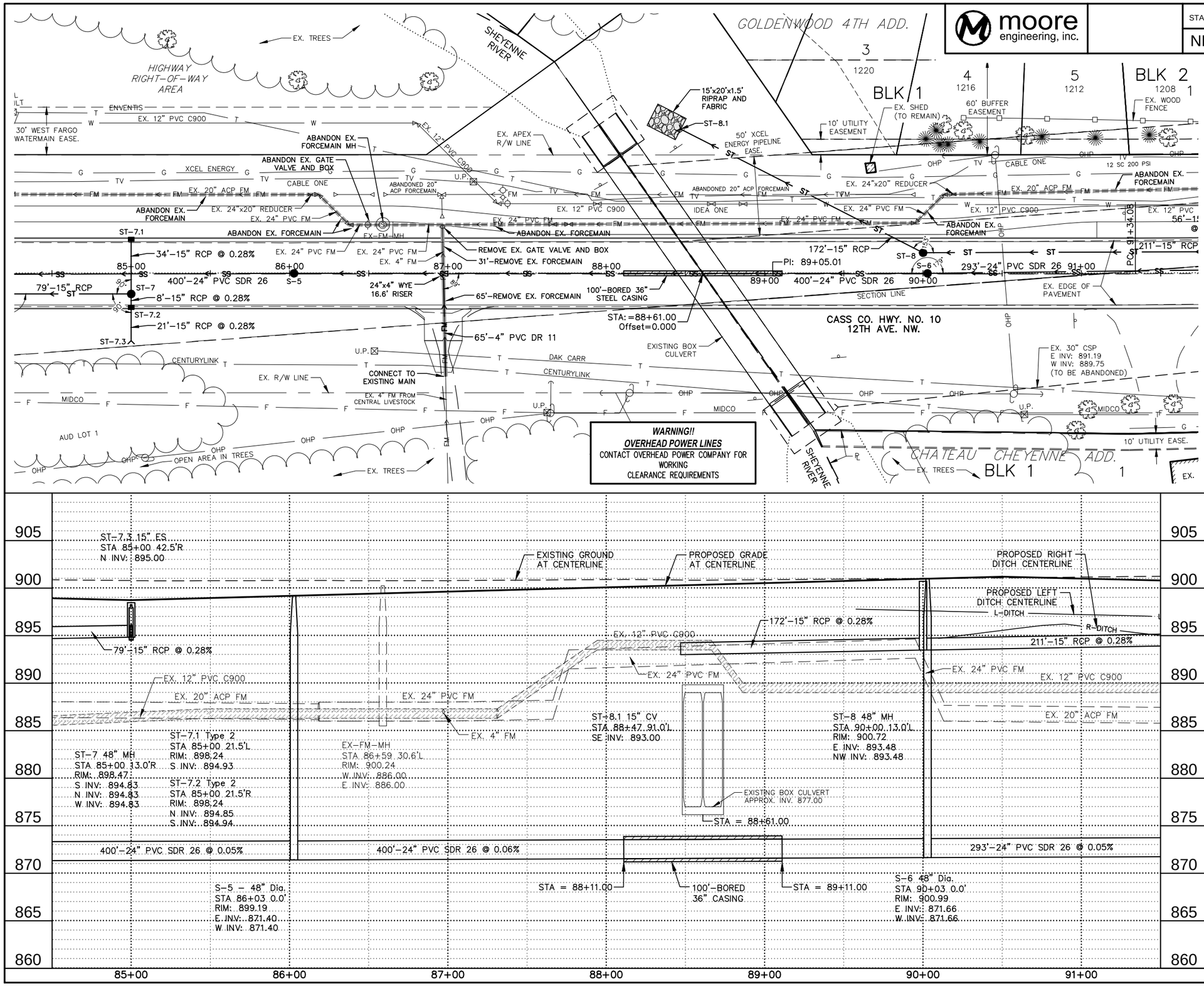
STA 77+50 - 84+50

2/5/2015 11:31:43 AM

FILE LOCATION: R:\Civil 3D Projects\16843\DRAWINGS\DESIGN\16843-PP.dwg

moore engineering, inc.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	55	4



256 100 RIPRAP GRADE I	
Sta 88+47, 91.0' L	16.7 CY
714 210 PIPE CONC REINF 15IN CL III-STORM DRAIN	
ST-7 - ST-7.1 & ST-7 - ST-7.3	34 LF & 29 LF
St-9.1 - Sta 91+50 & Sta 84+50 - ST-8	322 LF & 50 LF
714 3005 END SECT-CONC REINF 15IN	
ST-7.3 (Sta 85+00, 42.5' R)	1 EA
714 5805 END SECT-CORR STEEL .064IN 15IN	
ST-8.1 (Sta 88+47, 91.0' L)	1 EA
714 7040 SANITARY SEWER SERVICE CONNECTION	
Sta 86+97, 0.0'	1 EA
714 8516 CASING PIPE 36IN	
Sta 88+11, 0.0' - 89+11, 0.0'	100 LF
722 100 MANHOLE 48IN	
ST-7 (Sta 85+00, 13.0' R) & ST-8 (Sta 90+00, 13.0' L)	1 EA & 1 EA
722 300 MANHOLE SANITARY	
S-5 (Sta 86+03, 0.0') & S-6 (Sta 90+03, 0.0')	1 EA & 1 EA
722 3510 INLET TYPE 2	
ST-7.1 (Sta 85+00, 21.5' L) & ST-7.2 (Sta 85+00, 21.5'R)	1 EA & 1 EA
724 944 CONNECTION TO EXISTING MAIN	
Sta 86+97, 65.0'R	1 EA
724 1095 BORE SANITARY SEWER PIPE	
Sta 88+11, 0.0' - 89+11, 0.0'	100 LF
724 1100 SANITARY SEWER 4IN	
Sta 86+97	81.6 LF
724 1125 24IN SANITARY SEWER PIPE	
Sta 84+50 - 91+50	700 LF

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Scale in Feet

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12TH AVENUE NORTH RECONSTRUCTION

DRAINAGE LAYOUTS

STA 84+50 - 91+50

2/5/2015 11:32:02 AM

FILE LOCATION: R:\Civil 3D Projects\16843\DRAWINGS\DESIGN\16843-PP.dwg

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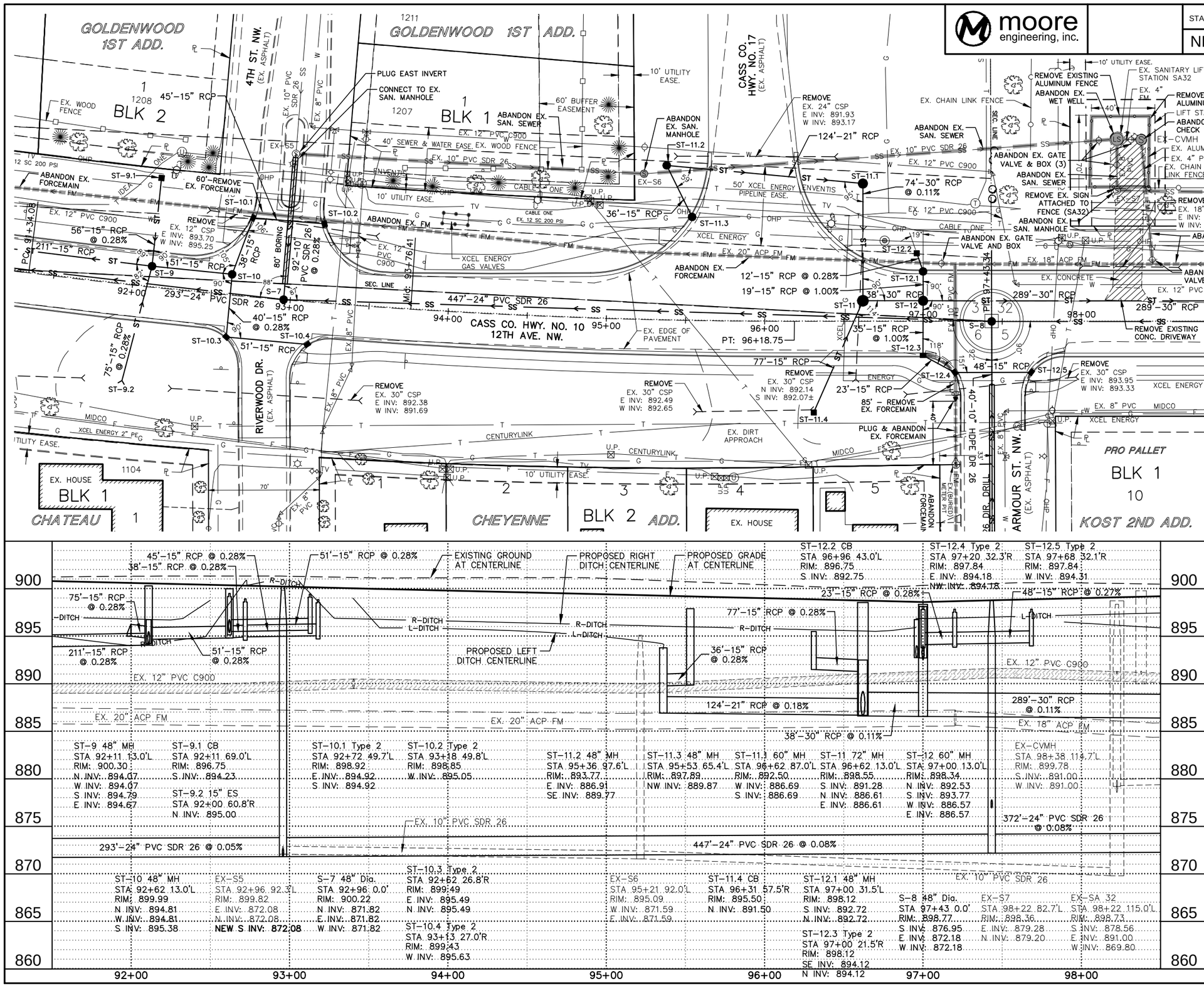
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	55	5



714 210 PIPE CONC REINF 15IN CL III-STORM DRAIN

Sta 91+50 - ST-10 & ST-10 - ST10.1	61 LF & 56 LF
ST-9 - ST-9.2 & ST-11 - ST-11.3	75 LF & 77 LF
ST-12 - ST-12.2 & ST-12 - ST-12.3	31 LF & 35 LF
ST-11.2 - ST-11.3 & ST-9 - ST-10	36 LF & 51 LF
ST-12.3 - ST-12.4 & ST-12.4 - ST-12.5	23 LF & 48 LF
ST-10 - ST-10.2 & ST-10 - ST-10.4	83 LF & 91 LF

714 405 PIPE CONC REINF 21IN CL III-STORM DRAIN

ST-11.1 - ST-11.2	124 LF

714 825 PIPE CONC REINF 30IN CL III-STORM DRAIN

ST-11 - ST-11.1 & ST-11 - Sta 98+50	74 LF & 190 LF

714 3005 END SECT-CONC REINF 15IN

ST-6.2 (Sta 92+11, 61.0' R)	1 EA

722 100 MANHOLE 48IN

ST-9 (Sta 92+11, 13.0' L)	1 EA
ST-10 (Sta 92+62, 13.0' L) & ST-12.1 (Sta 97+00, 33.5' L)	1 EA & 1 EA
ST-11.2 (Sta 95+36, 97.6' L)	1 EA
ST-11.3 (Sta 95+53, 65.4' L)	1 EA

722 110 MANHOLE 60IN

ST-12 (Sta 97+01, 13.0' L) & ST-11.1 (Sta 96+62, 87.0' L)	1EA & 1 EA

722 120 MANHOLE 72IN

ST-11 (Sta 96+62, 13.0' L)	1 EA

722 300 MANHOLE SANITARY

S-7 (Sta 92+96, 0.0') & S-8 (Sta 97+43, 0.0')	1 EA & 1 EA

722 2490 MANHOLE STORM CONNECTION

EX-S5 (Sta 92+96, 92.3' L)	1 EA

722 3499 INLET

ST-9.1 (Sta 92+11, 69.0' L) & ST-11.4 (Sta 96+31, 57.5' R)	1 EA & 1 EA
ST-12.2 (Sta 96+96, 43.0' L)	1 EA

722 3510 INLET TYPE 2

ST-10.1 (Sta 92+72, 49.7' L)	1 EA
ST-10.2 (Sta 93+18, 49.8' L)	1 EA
ST-10.3 (Sta 92+62, 26.8' R)	1 EA
ST-10.4 (Sta 93+13, 27.0' R)	1 EA
ST-12.3 (Sta 97+00, 21.5' R)	1 EA
ST-12.4 (Sta 97+20, 32.3' R)	1 EA
ST-12.5 (Sta 97+68, 32.1' R)	1 EA

724 1095 BORE SANITARY SEWER PIPE

Sta 92+96, 12.0' L	80 LF

724 1115 10IN SANITARY SEWER PIPE

Sta 92+96, 92.0' L	92 LF

724 1125 24IN SANITARY SEWER PIPE

Sta 91+50 - 98+50	700 LF

910 570 MODIFY MANHOLE

EX-S5 (Sta 92+96, 92.3'L)	1 EA

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12TH AVENUE NORTH RECONSTRUCTION

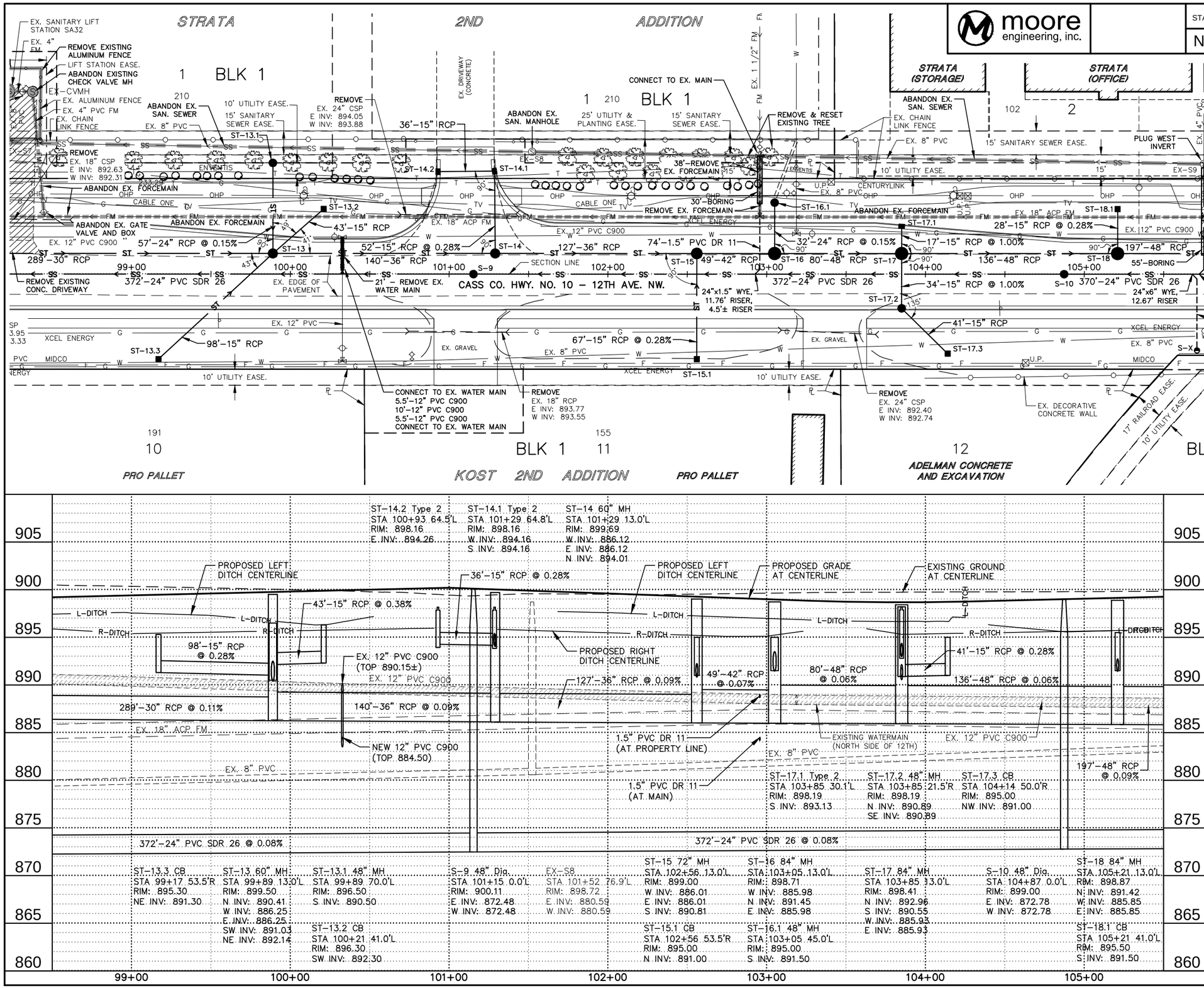
DRAINAGE LAYOUTS

STA 91+50 - 98+50

12/11/2014 10:38:35 AM

moore engineering, inc.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	55	6



714 210 PIPE CONC REINF 15IN CL III-STORM DRAIN
ST-13 - ST-13.3 & ST-15 - ST-15.1 — 98 LF & 67 LF
ST-14 - ST-14.1 & ST-14.1 - ST-14.2 — 52 LF & 36 LF
ST-17 - ST-17.1 & ST-17 - ST-17.3 — 17 LF & 75 LF
ST-18 - ST-18.1 & ST-13.2 - ST-13 — 28 LF & 43 LF

714 620 PIPE CONC REINF 24IN CL III-STORM DRAIN
ST-13 - ST-13.1 & ST-16 - ST-16.1 — 57 LF & 32 LF

714 825 PIPE CONC REINF 30IN CL III-STORM DRAIN
Sta 98+50 - ST-13 — 139 LF

714 910 PIPE CONC REINF 36IN CL III-STORM DRAIN
ST-13 - ST-14 & ST-14 - ST-15 — 140 LF & 127 LF

714 1010 PIPE CONC REINF 42IN CL III-STORM DRAIN
ST-15 - ST-16 — 49 LF

714 1110 PIPE CONC REINF 48IN CL III-STORM DRAIN
ST-16 - Sta 105+50 — 245 LF

714 7040 SANITARY SEWER SERVICE CONNECTION
Sta 102+96, 0.0' — 1 EA

722 100 MANHOLE 48IN
ST-13.1 (Sta 99+85, 75.0' L) & ST-16.1 (Sta 103+05, 45.0' L) — 1 EA & 1 EA
ST-17.2 (Sta 103+85, 21.5' R) — 1 EA

722 110 MANHOLE 60IN
ST-13 (Sta 99+89, 13.0' L) & ST-14 (Sta 101+29, 13.0' L) — 1 EA & 1 EA

722 120 MANHOLE 72IN
ST-15 (Sta 102+56, 13.0' L) — 1 EA

722 130 MANHOLE 84IN
ST-16 (Sta 103+05, 13.0' L) & ST-17 (Sta 103+85, 13.0' L) — 1 EA & 1 EA
ST-18 (Sta 105+21, 13.0' L) — 1 EA

722 300 MANHOLE SANITARY
S-9 (Sta 101+15, 0.0') & S-10 (Sta 104+87, 0.0') — 1 EA & 1 EA

722 3499 INLET
ST-13.3 (Sta 99+17, 53.5' R) & ST-15.1 (Sta 102+56, 53.5' R) — 1 EA & 1 EA
ST-17.3 (Sta 104+14, 50.0' R) & ST-18.1 (Sta 105+21, 41.0' L) — 1 EA & 1 EA
ST-13.2 (Sta 100+21, 41.0'L) — 1 EA

722 3510 INLET TYPE 2
ST-17.1 (Sta 103+85, 32.0' L) — 1 EA

724 210 FITTINGS-DUCTILE IRON
3-12" 45° BENDS (Sta 100+33) — 384 LBS

724 719 WATER LINE 1 1/2IN PVC
Sta 102+96 — 90.26 LF

724 850 WATERMAIN 12IN PVC
Sta 100+33 — 21 LF

724 944 CONNECTION TO EXISTING MAIN
Sta 100+33, 2.3'L & Sta 100+33, 23.3'L & Sta 102+96, 74.0'L — 1 EA, 1 EA, 1 EA

724 1095 BORE SANITARY SEWER PIPE
Sta 102+96, 44.0' L — 30 LF

724 1125 24IN SANITARY SEWER PIPE
Sta 98+50 - 105+50 — 700 LF

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Scale in Feet

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12TH AVENUE NORTH RECONSTRUCTION

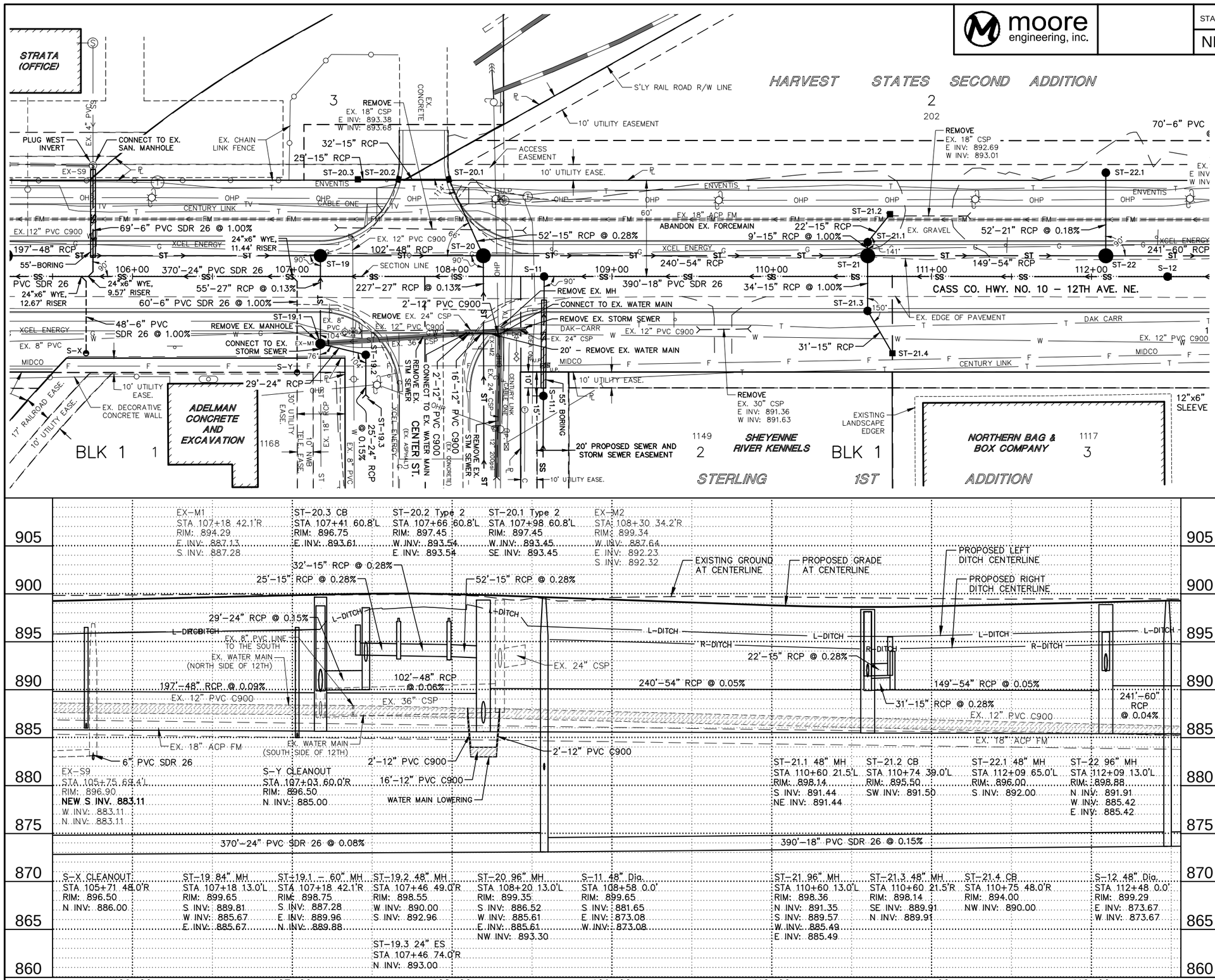
DRAINAGE LAYOUTS

STA 98+50 - 105+50

12/11/2014 10:38:55 AM

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	55	7

moore engineering, inc.



714 210	PIPE CONC REINF 15IN CL III-STORM DRAIN	
ST-20 - ST-20.1 & ST-20.1 - ST-20.2		52 LF & 32 LF
ST-20.2 - ST-20.3		25 LF
ST-21 - ST-21.2 & ST-21 - ST-21.4		31 LF & 65 LF
714 405	PIPE CONC REINF 21IN CL III-STORM DRAIN	
ST-22 - ST-22.1		52 LF
714 620	PIPE CONC REINF 24IN CL III-STORM DRAIN	
EX-M1 - ST-19.2 & ST-19.2 - ST-19.3		29 LF & 25 LF
714 710	PIPE CONC REINF 27IN CL III-STORM DRAIN	
ST-19 - ST-19.1		55 LF
714 1110	PIPE CONC REINF 48IN CL III-STORM DRAIN	
Sta 105+50 - ST-20		270 LF
714 1212	PIPE CONC REINF 54IN CL III-STORM DRAIN	
ST-20 - ST-22		389 LF
714 1312	PIPE CONC REINF 60IN CL III-STORM DRAIN	
ST-22 - Sta 112+50		41 LF
714 3020	END SECT-CONC REINF 24IN	
ST-19.3 (Sta 107+46, 74.0' R)		1 EA
714 7040	SANITARY SEWER SERVICE CONNECTION	
Sta 105+71, 0.0' & Sta 105+75, 0.0' & Sta 107+03, 0.0'		1 EA & 1 EA & 1 EA
722 100	MANHOLE 48IN	
ST-19.2 (Sta 107+46, 49.0' R) & ST-21.3 (Sta 110+60, 21.5' R)		1 EA & 1 EA
ST-21.1 (Sta 110+60, 21.5' L) & ST-22.1 (Sta 112+09, 65.0' L)		1 EA & 1 EA
722 110	MANHOLE 60IN	
ST-19.1 (Sta 107+18, 42.1' R)		1 EA
722 130	MANHOLE 84IN	
ST-19 (Sta 107+18, 13.0' L)		1 EA
722 140	MANHOLE 96IN	
ST-20 (Sta 108+20, 13.0' L) & ST-21 (Sta 110+60, 13.0' L)		1 EA & 1EA
ST-22 (Sta 112+09, 13.0' L)		1 EA
722 300	MANHOLE SANITARY	
S-11 (Sta 108+58, 0.0') & S-12 (Sta 112+48, 0.0')		1 EA & 1 EA
722 2490	MANHOLE STORM CONNECTION	
EX-S9 (Sta 105+75, 69.4' L)		1 EA
722 3499	INLET	
ST-20.3 (Sta 107+41, 60.8' L)		1 EA
ST-21.4 (Sta 110+76, 48.0' R) & ST-21.2 (Sta 110+74, 39.0' L)		1 EA & 1 EA
722 3510	INLET TYPE 2	
ST-20.1 (Sta 107+98, 60.8' L) & ST-20.2 (Sta 107+66, 60.8' L)		1 EA & 1 EA
724 1095	BORE SANITARY SEWER PIPE	
Sta 105+75, 14.0' L		55 LF
724 1120	6IN SEWER SERVICE PIPE	
Sta 105+71 & Sta 105+75 & Sta 107+03		60.67 LF & 78.57 LF & 71.44 LF
724 1121	18IN SANITARY SEWER PIPE	
S-11 - Sta 112+50		392 LF
724 1125	24IN SANITARY SEWER PIPE	
Sta 105+50 - S-11		308 LF
910 570	MODIFY MANHOLE	
EX-S9 (Sta 105+75, 69.4' L)		1 EA
990 400	PIPE CLEANOUT	
S-X (Sta 105+71, 48.0' R) & S-Y (Sta 107+03, 60.0' R)		1 EA & 1 EA

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12TH AVENUE NORTH RECONSTRUCTION

DRAINAGE LAYOUTS

STA 105+50 - 112+50

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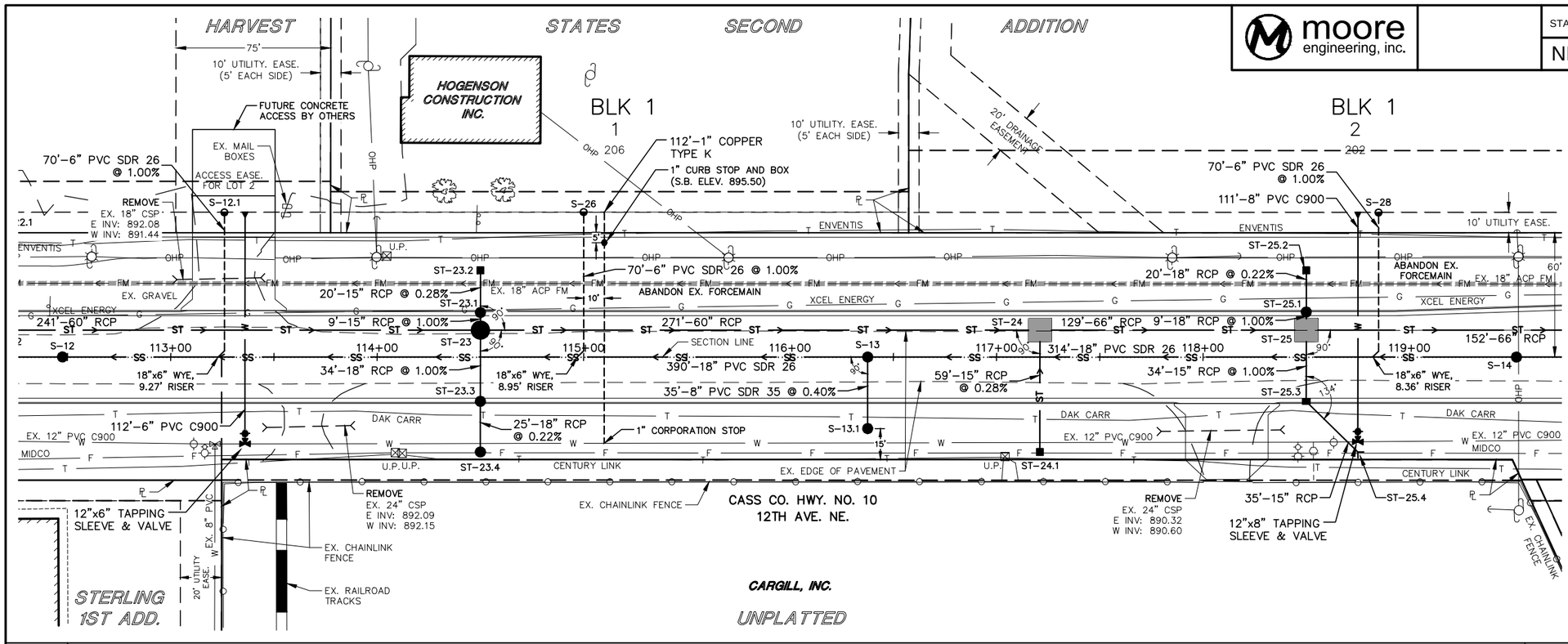
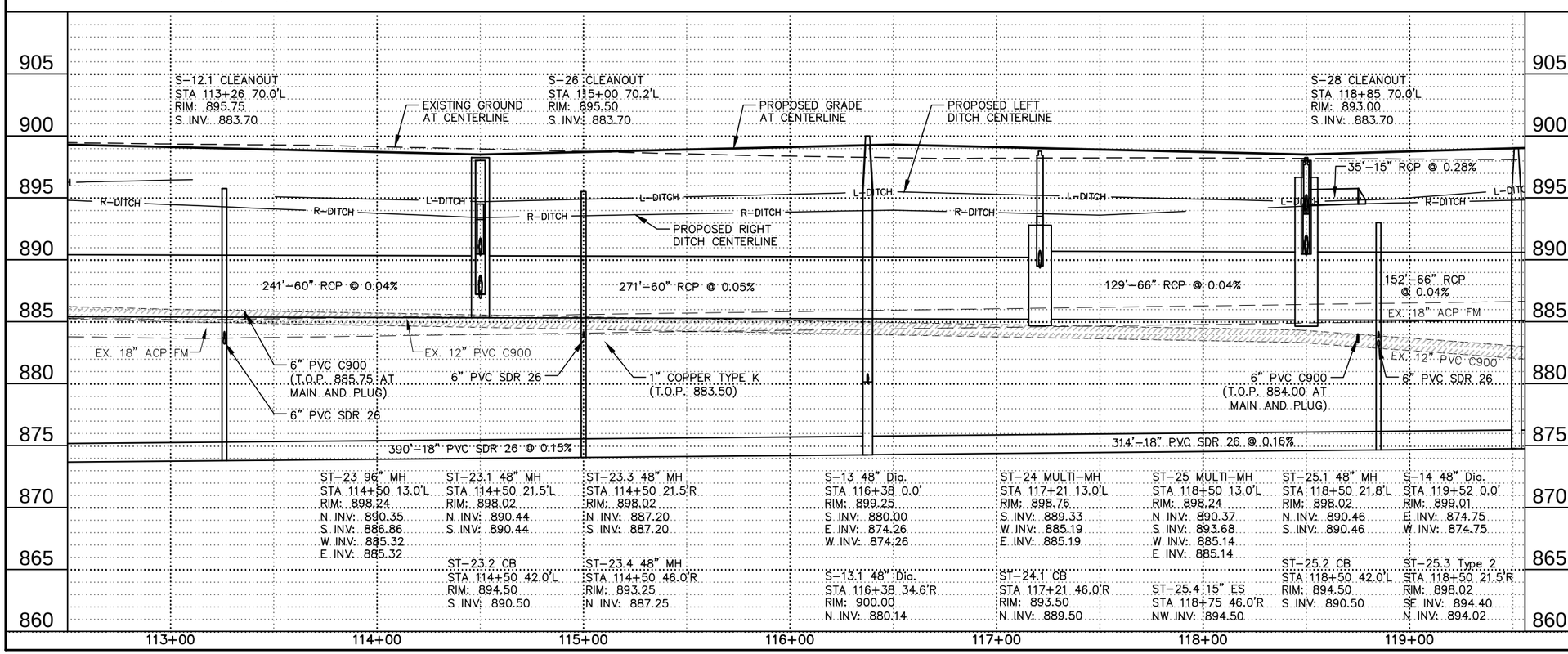
moore engineering, inc.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	55	8





714 210 PIPE CONC REINF 15IN CL III-STORM DRAIN	
ST-23 - ST-23.2 & ST24 - ST-24.1	29 LF & 59 LF
ST-25 - ST-25.4	69 LF
714 315 PIPE CONC REINF 18IN CL III-STORM DRAIN	
ST-23 - ST-23.4 & ST-25 - ST-25.2	59 LF & 29 LF
714 1312 PIPE CONC REINF 60IN CL III-STORM DRAIN	
Sta 112+50 - ST-24	471 LF
714 1412 PIPE CONC REINF 66IN CL III-STORM DRAIN	
ST-24 - Sta 119+50	229 LF
714 3005 END SECT-CONC REINF 15IN	
ST-25.4 (Sta 118+75, 46.0' R)	1 EA
714 7040 SANITARY SEWER SERVICE CONNECTION	
Sta 112+82, 00.0' & Sta 115+00, 0.0'	1 EA & 1 EA
Sta 118+85, 0.0'	1 EA
722 100 MANHOLE 48IN	
ST-23.1 (Sta 114+50, 21.5' L) & ST-23.3 (Sta 114+50, 21.5' R)	1 EA & 1 EA
ST-23.4 (Sta 114+50, 46.0' R) & ST-25.1 (Sta 118+50, 21.8' L)	1 EA & 1 EA
722 140 MANHOLE 96IN	
ST-23 (Sta 114+50, 13.0' L)	1 EA
722 220 MULTI MANHOLE	
ST-24 (Sta 117+21, 13.0' L) & ST-25 (Sta 118+50, 13.0' L)	1 EA & 1 EA
722 300 MANHOLE SANITARY	
S-13 (Sta 116+38, 0.0') & S-13.1 (Sta 116+38, 34.6' R)	1 EA & 1 EA
722 3499 INLET	
ST-23.2 (Sta 114+50, 42.0' L) & ST-24.1 (Sta 117+21, 46.0' R)	1 EA & 1 EA
ST-25.2 (Sta 118+50, 42.0' L)	1 EA
722 3510 INLET TYPE 2	
ST-25.3 (Sta 118+50, 21.5' R)	1 EA
724 210 FITTINGS-DUCTILE IRON	
6IN PLUG (Sta 113+36, 67.5'L)	23 LBS
8IN PLUG (Sta 118+70, 67.5'L)	32 LBS
724 530 TAPPING SLEEVE & VALVE 12IN X 6IN	
Sta 113+36, 42.1'R	1 EA
724 540 TAPPING SLEEVE & VALVE 12IN X 8IN	
Sta 118+75, 41.1'R	1 EA
724 810 WATERMAIN 6IN PVC	
Sta 113+36	112 LF
724 830 WATERMAIN 8IN PVC	
Sta 118+75	111 LF
724 1110 8IN SANITARY SEWER PIPE	
S-13 - S-13.1	35 LF
724 1120 6IN SEWER SERVICE PIPE	
Sta 113+26 - S-12.1 & Sta 115+00 - S-26	79.27 LF & 78.95 LF
Sta 118+85 - S-28	78.36 LF
724 1121 18IN SANITARY SEWER PIPE	
Sta 112+50 - 119+50	700 LF
724 6005 CORPORATION COCK & SWIVEL BEND 1IN	
Sta 115+10, 41.8'R	1 EA
724 7018 1IN CURB STOP & BOX-NEW SERVICE	
Sta 115+10, 55.4'L	1 EA
724 7020 1IN CU-TYPE K	
Sta 115+10, 55.4'L	112 LF
990 400 PIPE CLEANOUT	
S-12.1 (Sta 112+82, 70.2' L) & S-26 (Sta 115+00, 70.2' L)	1 EA & 1 EA
S-28 (Sta 118+85, 70.0' L)	1 EA

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Scale in Feet

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12TH AVENUE NORTH RECONSTRUCTION

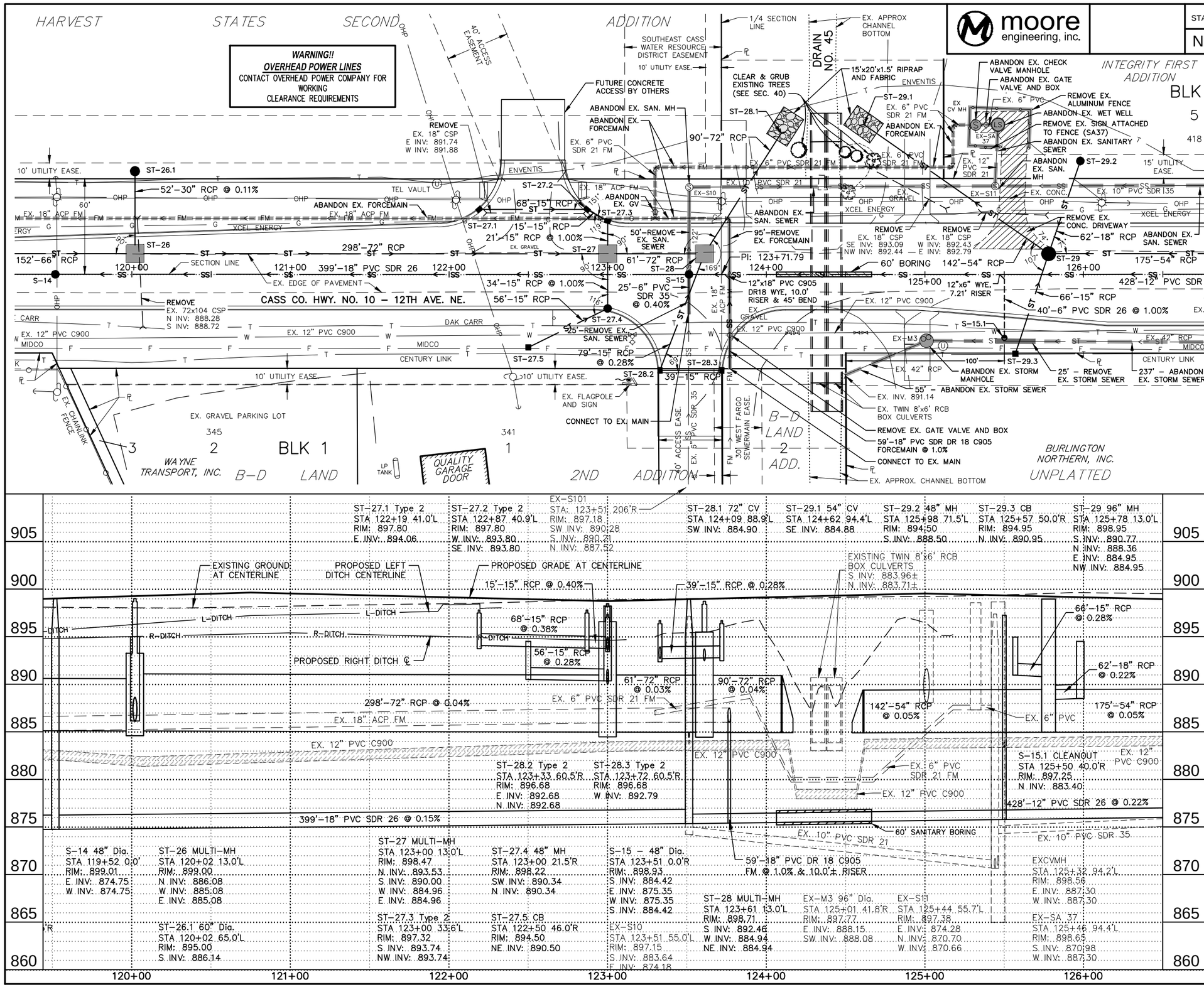
DRAINAGE LAYOUTS

STA 112+50 - 119+50

FILE LOCATION: R:\Civil 3D Projects\16843\DRAWINGS\DESIGN\16843-PP.dwg

moore engineering, inc.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	55	9



256 0100 RIPRAP GRADE I	
Sta - 124+09, 88.9' L & Sta 124+62, 94.4' L	16.7 CY & 16.7 CY
714 210 PIPE CONC REINF 15IN CL III-STORM DRAIN	
ST-27 - ST-27.1 & ST-27 - ST-27.5	102 LF & 90 LF
ST-29 - ST-29.3 & ST-28 - ST-28.3	66 LF & 118 LF
714 315 PIPE CONC REINF 18IN CL III-STORM DRAIN	
ST-29 - ST-29.2	62 LF
714 825 PIPE CONC REINF 30IN CL III-STORM DRAIN	
ST-26 - ST-26.1	52 LF
714 1212 PIPE CONC REINF 54IN CL III-STORM DRAIN	
ST-29.1 - Sta 126+50	214 LF
714 1412 PIPE CONC REINF 66IN CL III-STORM DRAIN	
Sta 119+50 - ST-26	52 LF
714 1512 PIPE CONC REINF 72IN CL III-STORM DRAIN	
ST-26 - ST-28.1	449 LF
714 5845 END SECT-CORR STEEL .109IN 54IN	
ST-29.1 (Sta 124+41, 108.9' L)	1 EA
714 5855 END SECT-CORR STEEL .109IN 72IN	
ST-28.1 (Sta 124+22, 108.9' L)	1 EA
714 7040 SANITARY SEWER SERVICE CONNECTION	
Sta 123+76, 0.0' & Sta 125+50, 0.0'	1 EA & 1 EA
722 100 MANHOLE 48IN	
ST-27.4 (Sta 122+50, 31.5' R) & ST-29.2 (Sta 125+98, 71.5' L)	1 EA & 1 EA
722 110 MANHOLE 60IN	
ST-26.1 (Sta 120+02, 65.0' L)	1 EA
722 140 MANHOLE 96IN	
ST-29 (Sta 125+78, 13.0' L)	1 EA
722 220 MULTI MANHOLE	
ST-26 (Sta 120+02, 13.0' L) & ST-27 (Sta 122+50, 13.0' L)	1 EA & 1 EA
ST-28 (Sta 123+61, 13.0' L)	1 EA
722 300 MANHOLE SANITARY	
S-14 (Sta 119+52, 0.0') & S-15 (Sta 123+51, 0.0')	1 EA & 1 EA
722 3499 INLET	
ST-27.5 (Sta 122+50, 46.5' R) & ST-29.3 (Sta 125+57, 60.5' R)	1 EA & 1 EA
722 3510 INLET TYPE 2	
ST-27.1 (Sta 122+19, 41.0' L)	1 EA
ST-27.2 (Sta 122+87, 40.9' L)	1 EA
ST-27.3 (Sta 122+50, 29.2' L)	1 EA
ST-28.2 (Sta 123+33, 60.5' R) & ST-28.3 (Sta 123+72, 60.5' R)	1 EA & 1 EA
724 944 CONNECTION TO EXISTING MAIN	
Sta 123+51, 25.0' R & Sta 123+76, 59.0' R	1 EA & 1 EA
724 1095 BORE SANITARY SEWER PIPE	
Sta 124+06, 0.0' - Sta 124+66, 0.0'	60 LF
724 1117 12IN SANITARY SEWER PIPE	
S-15 - Sta 126+50	299 LF
724 1120 6IN SEWER SERVICE PIPE	
Sta 123+51 & Sta 125+50, 0.0' - S-15.1	25 LF & 47.21 LF
724 1121 18IN SANITARY SEWER PIPE	
Sta 119+50 - S-15 & 123+76	401 LF & 69 LF
990 400 PIPE CLEANOUT	
S-15.1 (Sta 125+50, 24.6' R)	1 EA

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12TH AVENUE NORTH RECONSTRUCTION

DRAINAGE LAYOUTS

STA 119+50 - 126+50

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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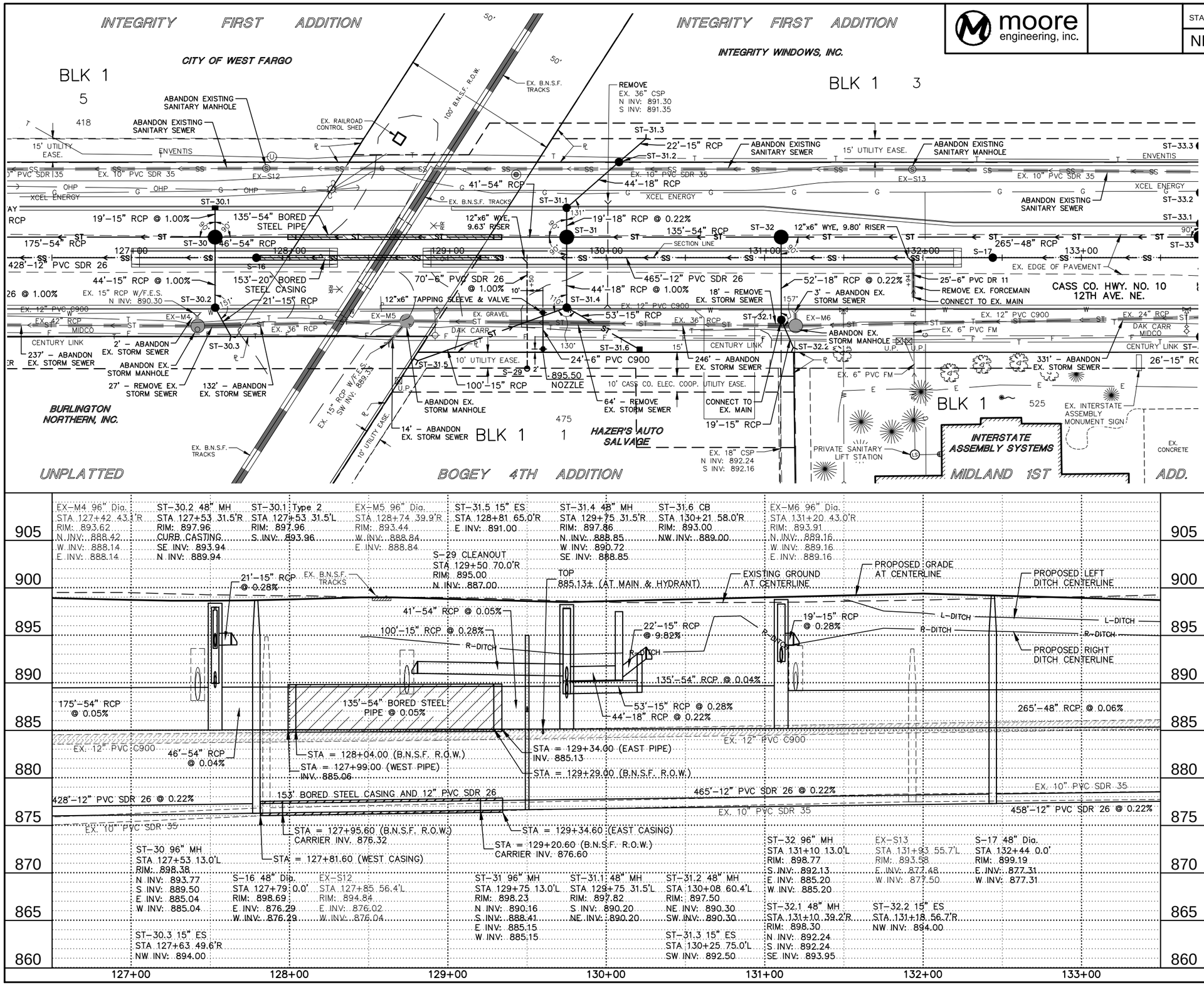

714 210 PIPE CONC REINF 15IN CL III-STORM DRAIN
ST-30 - ST-30.1 & ST-30 - ST-30.3 — 19 LF & 65 LF
ST-31.2 - ST-31.3 & ST-32.1 - ST-32.2 — 22 LF & 19 LF
ST-31.3 - ST-31.4 & ST-31.3 - ST-31.5 — 100 LF & 53 LF

714 315 PIPE CONC REINF 18IN CL III-STORM DRAIN
ST-31 - ST-31.2 & ST-31 - ST-31.3 — 63 LF & 44 LF
ST-32 - ST-32.1 — 52 LF

714 1110 PIPE CONC REINF 48IN CL III-STORM DRAIN
ST-32 - Sta 133+50 — 240 LF

714 1212 PIPE CONC REINF 54IN CL III-STORM DRAIN
Sta 126+50 - Sta 127+99 & Sta 129+34 - ST-32 — 149 LF & 176 LF

714 3005 END SECT-CONC REINF 15IN
ST-30.3 (Sta 127+63, 49.6' R) — 1 EA
ST-31.5 (Sta 128+81, 65.0' R) — 1 EA
ST-31.3 (Sta 130+25, 75.0' L) — 1 EA
ST-32.2 (Sta 131+18, 56.7' R) — 1 EA

714 7040 SANITARY SEWER SERVICE CONNECTION
Sta 129+50, 0.0' & Sta 131+93, 0.0' — 1 EA & 1 EA

714 8050 PIPE STEEL SMOOTH WALL .719IN 54IN BORED
Sta 127+99, 13.0'L - 129+34, 13.0'L — 135 LF

714 8500 CASING PIPE 20IN
Sta 127+81.60, 0.0' - 129+34.60, 0.0' — 153 LF

722 100 MANHOLE 48IN
ST-30.2 (Sta 127+53, 31.5' R) & ST-31.1 (Sta 129+75, 31.5' L) — 1 EA & 1 EA
ST-31.2 (Sta 130+08, 60.4' L) & ST-31.4 (Sta 129+75, 31.5' R) — 1 EA & 1 EA
ST-32.1 (Sta 131+10, 45.0' R) — 1 EA

722 140 MANHOLE 96IN
ST-30 (Sta127+53, 13.0' L) & ST-31 (Sta 129+75, 13.0' L) — 1 EA & 1 EA
ST-32 (Sta 131+10, 13.0' L) — 1 EA

722 300 MANHOLE SANITARY
S-16 (Sta 127+79, 0.0') & S-17 (Sta 132+44, 0.0') — 1 EA & 1 EA

722 3499 INLET
ST-31.6 (Sta 130+21, 58.0' R) — 1 EA

722 3510 INLET TYPE 2
ST-30.1 (Sta 127+53, 31.5' L) — 1 EA

724 410 HYDRANT-INSTALL 5IN
Sta 129+60, 57.6'R — 1 EA

724 530 TAPPING SLEEVE & VALVE 12IN X 6IN
Sta 129+60, 34.7'R — 1 EA

724 810 WATERMAIN 6IN PVC
Sta 129+60 — 24 LF

724 944 CONNECTION TO EXISTING MAIN
Sta 131+93, 25.0' R & ST-32.1 (Sta 131+10, 39.2' R) — 1 EA & 1 EA

724 1095 BORE SANITARY SEWER PIPE
Sta 127+81.60, 0.0' - 129+34.60, 0.0' — 153 LF

724 1117 12IN SANITARY SEWER PIPE
Sta 126+50 - 133+50 — 700 LF

724 1120 6IN SEWER SERVICE PIPE
Sta 129+50 - S-29 & Sta 131+93 — 76.63 LF & 34.8 LF

990 400 PIPE CLEANOUT
S-29 (Sta 129+50, 70.0'R) — 1 EA

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12TH AVENUE NORTH RECONSTRUCTION

DRAINAGE LAYOUTS

STA 126+50 - 133+50

FILE LOCATION: R:\Civil 3D Projects\16843\DRAWINGS\DESIGN\16843-PP.dwg

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	55	11

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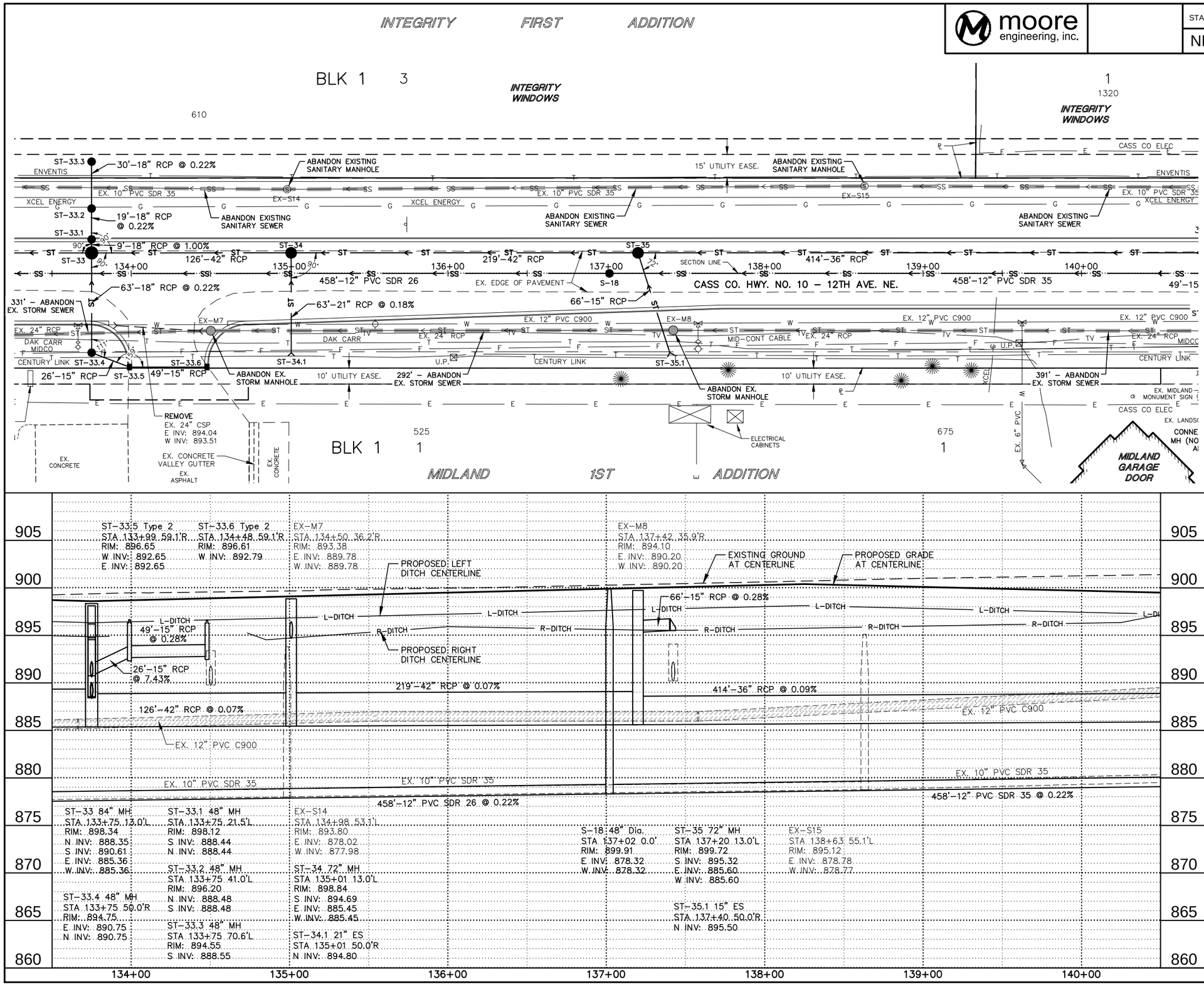

714 210 PIPE CONC REINF 15IN CL III-STORM DRAIN
ST-33.4 - ST-33.6 & ST-35 - ST35.1 — 75 LF & 66 LF

714 315 PIPE CONC REINF 18IN CL III-STORM DRAIN
ST-33 - ST-33.3 & ST-33 - ST-33.4 — 58 LF & 63 LF

714 405 PIPE CONC REINF 21IN CL III-STORM DRAIN
ST-34 - ST-34.1 — 63 LF

714 910 PIPE CONC REINF 36IN CL III-STORM DRAIN
ST-35 - Sta 140+50 — 330 LF

714 1010 PIPE CONC REINF 42IN CL III-STORM DRAIN
ST-33 - ST-35 — 345 LF

714 1110 PIPE CONC REINF 48IN CL III-STORM DRAIN
Sta 133+50 - ST-33 — 25 LF

714 3005 END SECT-CONC REINF 15IN
ST-35.1 (Sta 137+40, 50.0' R) — 1 EA

714 3015 END SECT-CONC REINF 21IN
ST-34.1 (Sta 135+01, 50.0' R) — 1 EA

722 100 MANHOLE 48IN
ST-33.1 (Sta 133+75, 21.5' L) & ST-33.2 (Sta 133+75, 41.0' L) — 1 EA & 1 EA
ST-33.3 (Sta 133+75, 70.6' L) & ST-33.4 (Sta 133+75, 50.0' R) — 1 EA & 1 EA

722 120 MANHOLE 72IN
ST-34 (Sta 135+01, 13.0' L) & ST-35 (Sta 137+20, 13.0' L) — 1 EA & 1 EA

722 130 MANHOLE 84IN
ST-33 (Sta 133+75, 13.0' L) — 1 EA

722 300 MANHOLE SANITARY
S-18 (Sta 137+02, 0.0') — 1 EA

722 3510 INLET TYPE 2
ST-33.4 (Sta 133+75, 32.2' R) — 1 EA
ST-33.5 (Sta 133+99, 59.1' R) — 1 EA
ST-33.6 (Sta 134+48, 59.1' R) — 1 EA

724 1117 12IN SANITARY SEWER PIPE
Sta 133+50 - Sta 140+50 — 700 LF

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12TH AVENUE NORTH RECONSTRUCTION

DRAINAGE LAYOUTS

STA 133+50 - 140+50

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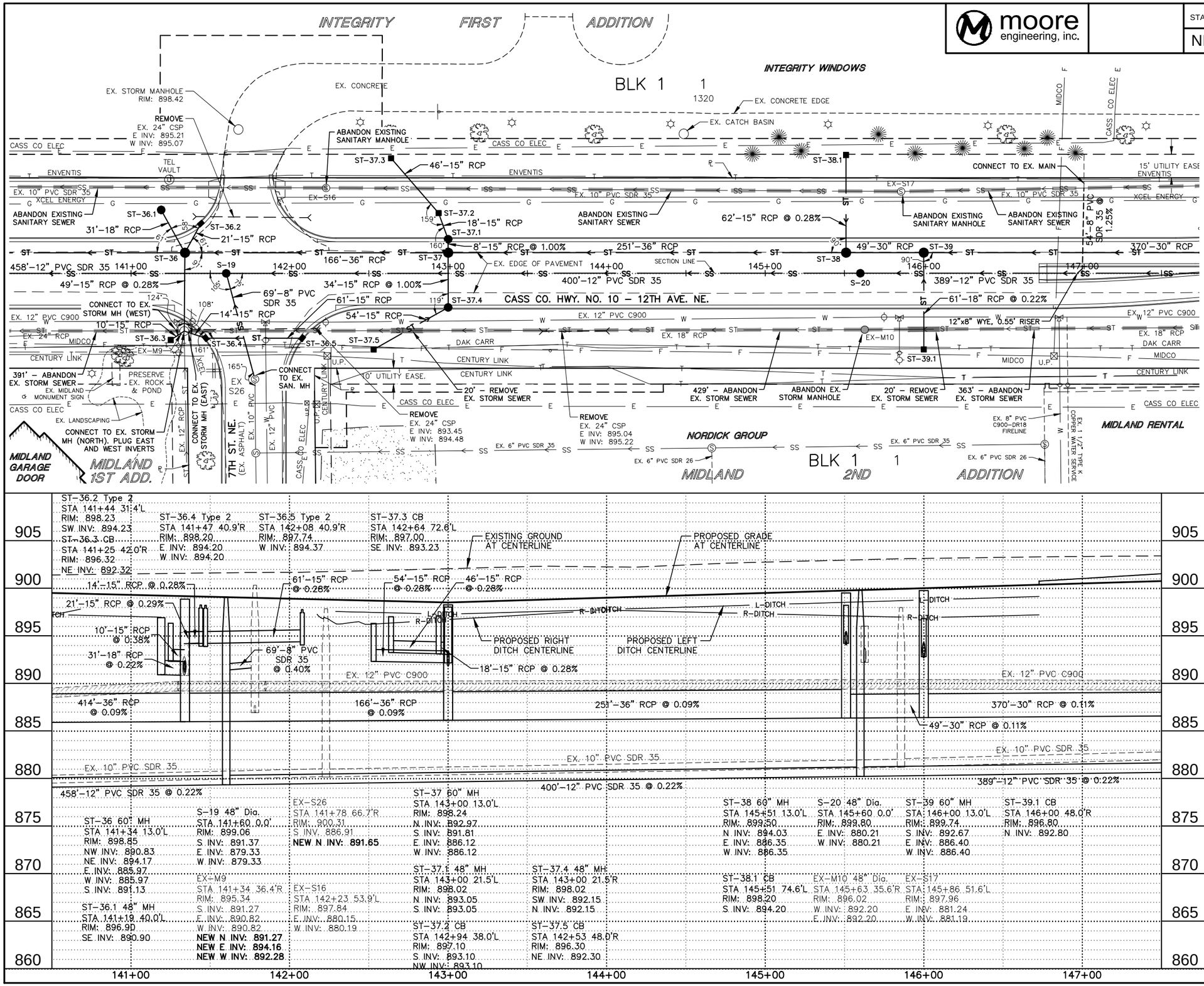
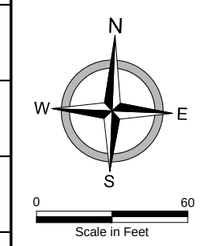
ND	SU-8-992(036)037	55	12



714 210 PIPE CONC REINF 15IN CL III-STORM DRAIN	
ST-36 - EX-M9 & ST-37 - ST-37.3	49 LF & 72 LF
ST-36 - ST-36.2 & EX-M9 - ST-36.5	21 LF & 75 LF
ST-37 - ST-37.5 & ST-38 - ST-38.1	88 LF & 62 LF
EX-M9 - ST-36.3	10 LF
714 315 PIPE CONC REINF 18IN CL III-STORM DRAIN	
ST-36 - ST-36.1 & ST-39 - ST-39.1	31 LF & 61 LF
714 825 PIPE CONC REINF 30IN CL III-STORM DRAIN	
ST-38 - Sta 147+50	199 LF
714 910 PIPE CONC REINF 36IN CL III-STORM DRAIN	
Sta 140+50 - ST-38	501 LF
714 7040 SANITARY SEWER SERVICE CONNECTION	
Sta 147+00, 0.0'	1 EA
722 100 MANHOLE 48IN	
ST-36.1 (Sta141+19, 40.0' L)	1 EA
ST-37.1 (Sta143+00, 21.5' L) & ST-37.4 (Sta 143+00, 21.5'R	1 EA & 1 EA
722 110 MANHOLE 60IN	
ST-37 (Sta 143+00, 13.0' L) & ST-38 (Sta 145+51, 13.0' L)	1 EA & 1 EA
ST-39 (Sta 146+00, 13.0' L) & ST-36 (Sta 141+34, 13.0' L)	1 EA & 1 EA
722 300 MANHOLE SANITARY	
S-19 (Sta 141+60, 0.0') & S-20 (Sta 145+60, 0.0')	1EA & 1 EA
722 2490 MANHOLE STORM CONNECTION	
EX-M9 NORTH (Sta 141+34, 36.4' R) & EX-S20 (Sta 141+78, 66.7'R)	1 EA & 1 EA
EX-M9 EAST (Sta 141+34, 36.4' R)	1 EA
EX-M9 WEST (Sta 141+34, 36.4' R)	1 EA
722 3499 INLET	
ST-37.2 (Sta 142+94, 38.0' L) & ST-37.5 (Sta 142+53, 48.0' R)	1 EA & 1 EA
ST-37.3 (Sta 142+64, 72.6' L) & ST-36.3 (Sta 141+25, 42.0' R)	1 EA & 1 EA
ST-38.1 (Sta 145+51, 74.6' L) & ST-39.1 (Sta 146+00, 48.0' R)	1 EA & 1 EA
722 3510 INLET-TYPE 2	
ST-36.4 (Sta 141+47, 40.9' R) & ST-36.5 (Sta 142+08, 40.9' R)	1 EA & 1 EA
ST-36.2 (Sta 141+44, 31.4'L)	1 EA
724 944 CONNECTION TO EXISTING MAIN	
Sta 147+00, 54.0'L	1 EA
724 1110 8IN SANITARY SEWER PIPE	
S-19 - EX-26	69 LF
Sta 147+00	54.55 LF
724 1117 12IN SANITARY SEWER PIPE	
Sta 140+50 - Sta 147+50	700 LF
910 570 MODIFY MANHOLE	
EX-M9 (Sta 141+34, 36.4' R)	1 EA



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12TH AVENUE NORTH RECONSTRUCTION

DRAINAGE LAYOUTS

STA 140+50 - 147+50

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	55	13

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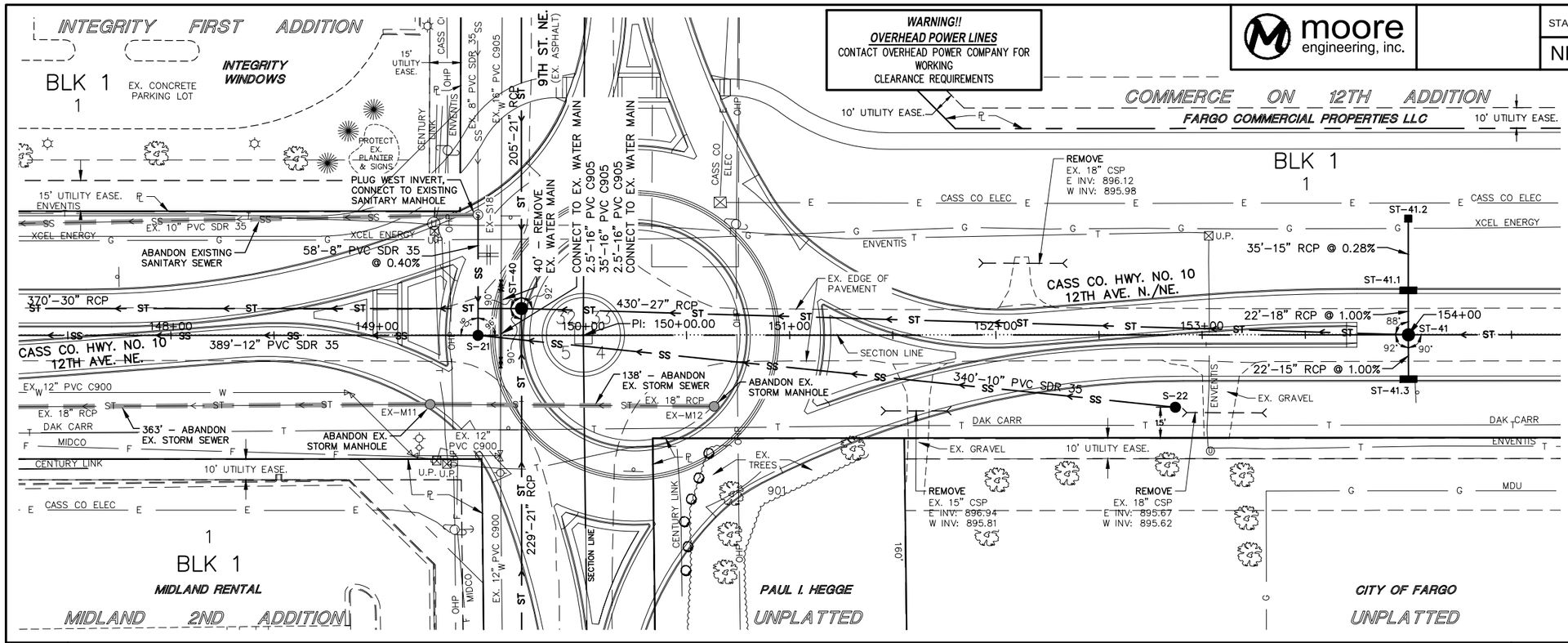

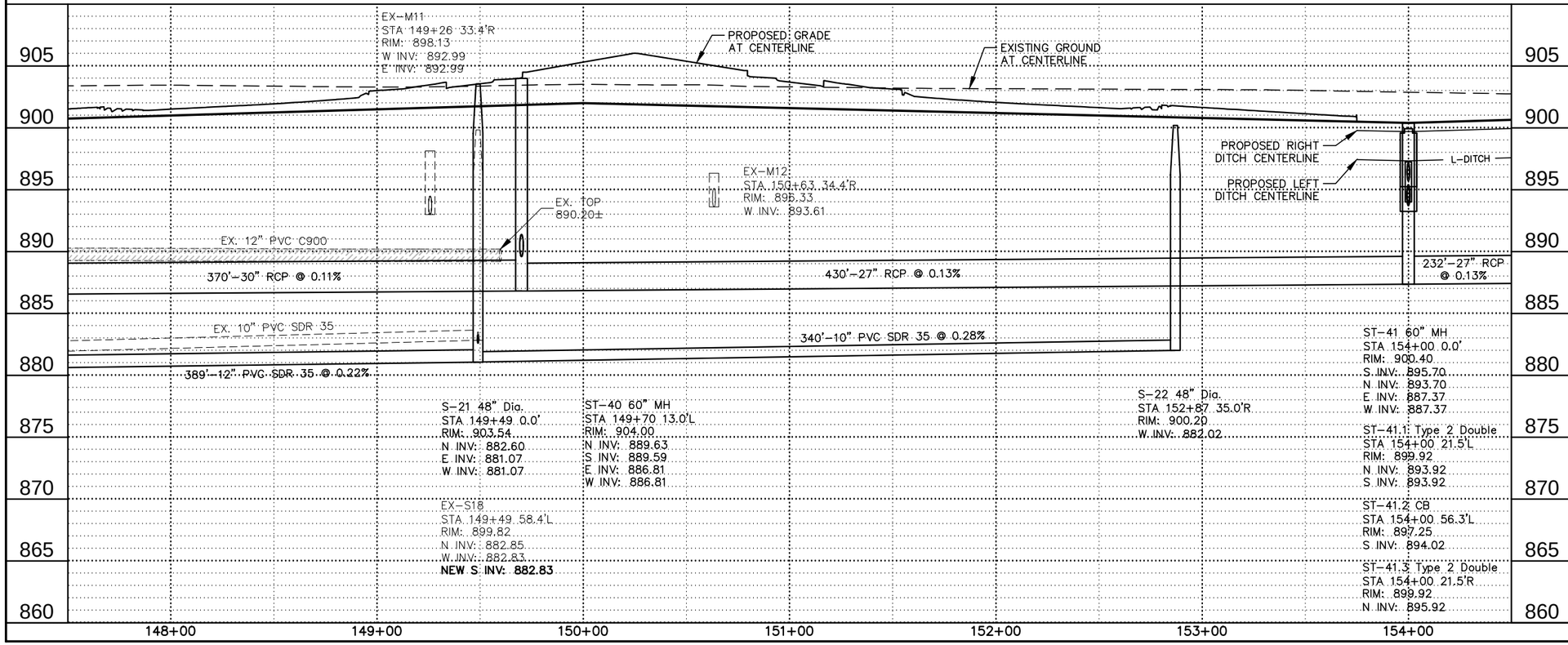

714 210 PIPE CONC REINF 15IN CL III-STORM DRAIN	
ST-41 - ST-41.3 & ST-41.1 - ST-41.2	22 LF & 35 LF
714 315 PIPE CONC REINF 18IN CL III-STORM DRAIN	
ST-41 - ST-41.1	22 LF
714 710 PIPE CONC REINF 27IN CL III-STORM DRAIN	
ST-40 - Sta 154+50	480 LF
714 825 PIPE CONC REINF 30IN CL III-STORM DRAIN	
Sta 147+50 - ST-40	220 LF
722 110 MANHOLE 60IN	
ST-41 (Sta 154+00, 0.0')	1 EA
722 120 MANHOLE 72IN	
ST-40 (Sta 149+70, 13.0' L)	1 EA
722 300 MANHOLE SANITARY	
S-21 (Sta 149+49, 0.0') & S-22 (152+87, 35.0' R)	1 EA & 1 EA
722 3499 INLET	
ST-41.2 (Sta 154+00, 56.3' L)	1 EA
722 3520 INLET-TYPE 2 DOUBLE	
ST-41.3 (Sta 154+00, 21.5' R) & ST-41.1 (Sta 154+00, 21.5' L)	1 EA & 1 EA
724 1115 10IN SANITARY SEWER PIPE	
S-21 - S-22	340 LF
724 1117 12IN SANITARY SEWER PIPE	
Sta 147+50 - S-21	199 LF

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12TH AVENUE NORTH RECONSTRUCTION

DRAINAGE LAYOUTS

STA 147+50 - 154+50

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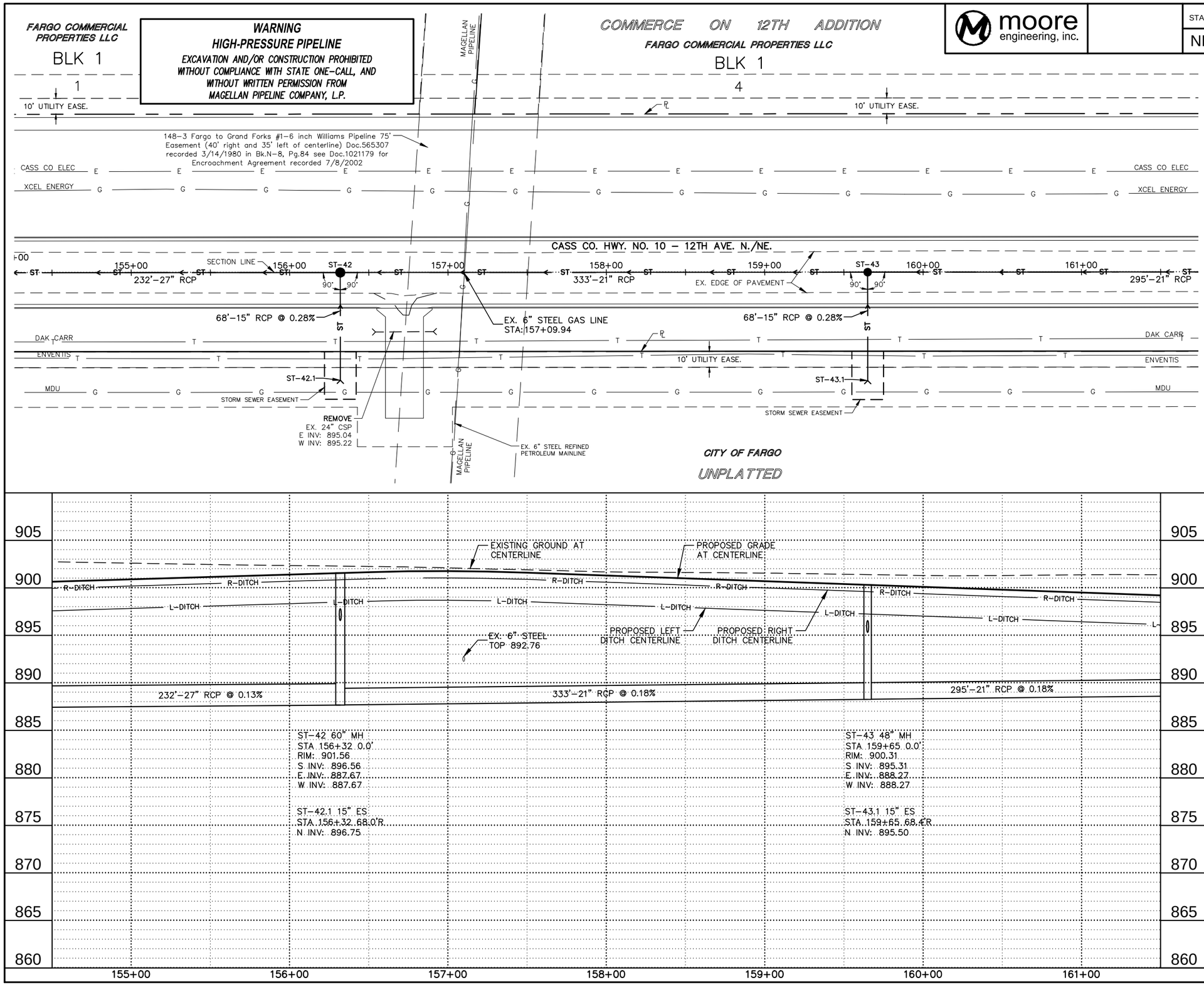
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	55	14

moore engineering, inc.



714 210 PIPE CONC REINF 15IN CL III-STORM DRAIN
ST-42 - ST-42.1 & ST-43 - ST43.1 — 68 LF & 68 LF

714 405 PIPE CONC REINF 21IN CL III-STORM DRAIN
ST-42 - Sta 161+50 — 518 LF

714 710 PIPE CONC REINF 27IN CL III-STORM DRAIN
Sta 154+50 - ST-42 — 182 LF

714 3005 END SECT-CONC REINF 15IN
ST-42.1 (Sta 156+32, 68.0' R) & ST-43.1 (Sta 159+65, 68.4' R) — 1 EA & 1 EA

722 100 MANHOLE 48IN
ST-43 (Sta 159+65, 0.0') — 1 EA

722 110 MANHOLE 60IN
ST-42 (Sta 156+32, 0.0') — 1 EA

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12TH AVENUE NORTH RECONSTRUCTION

DRAINAGE LAYOUTS

STA 154+50 - 161+50

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	55	15

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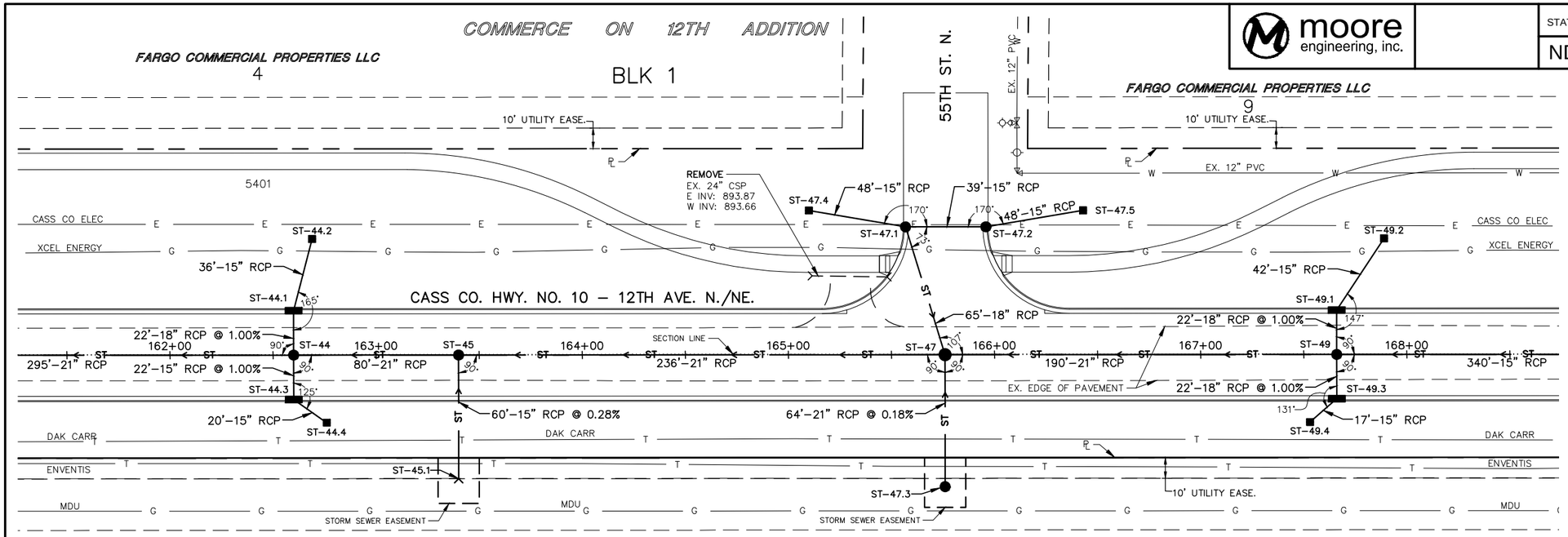

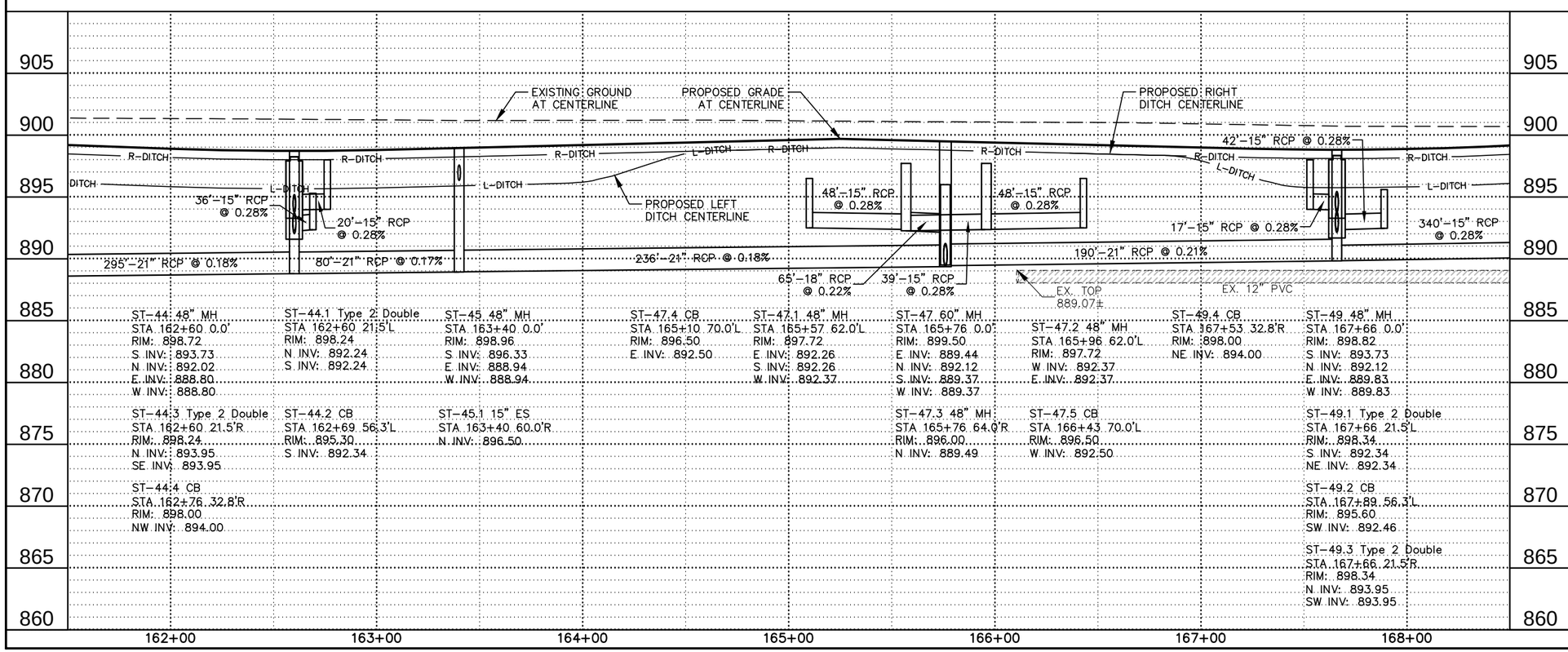

714 210 PIPE CONC REINF 15IN CL III-STORM DRAIN

ST-44 - ST-44.4 & ST-45 - ST-45.1	42 LF & 60 LF
ST-44.1 - ST-44.2 & ST-47.1 - ST-47.4	36 LF & 48 LF
ST-49 - Sta 168+50 & ST-47.1 - ST-47.5	82 LF & 87 LF
ST-49.1 - ST-49.2 & ST-49.3 - ST-49.4	42 LF & 17 LF

714 315 PIPE CONC REINF 18IN CL III-STORM DRAIN

ST-44 - ST-44.1 & ST-47 - ST-47.1	22 LF & 65 LF
ST-49 - ST-49.1 & ST-49 - ST-49.3	22 LF & 22 LF

714 405 PIPE CONC REINF 21IN CL III-STORM DRAIN

Sta 161+50 - ST-49	616 LF
ST-47 - ST-47.3	64 LF

714 3005 END SECT-CONC REINF 15IN

ST-45.1 (Sta 163+40, 60.0' R)	1 EA

722 100 MANHOLE 48IN

ST-44 (Sta 162+60, 0.0') & ST-44.1 (Sta 162+60, 21.5' L)	1 EA & 1 EA
ST-45 (Sta 163+40, 0.0') & ST-47.3 (Sta 165+76, 64.0' R)	1 EA & 1 EA
ST-49 (Sta 167+66, 0.0') & ST-47.1 (Sta 165+57, 62.0'L)	1 EA & 1 EA
ST-47.2 (Sta 165+96, 62.0'L)	1 EA

722 110 MANHOLE 60IN

ST-47 (Sta 165+76, 0.0')	1 EA

722 3499 INLET

ST-44.2 (Sta 162+69, 56.3' L) & ST-44.4 (Sta 162+76, 32.8' R)	1 EA & 1 EA
ST-46.1 (Sta 165+10, 70.0' L) & ST-48.1 (Sta 166+43, 70.0' L)	1 EA & 1 EA
ST-49.2 (Sta 167+89, 56.3' L) & ST-49.4 (Sta 167+53, 32.8' R)	1 EA & 1 EA

722 3520 INLET TYPE 2 DOUBLE

ST-44.3 (Sta 162+60, 21.5 'R) & ST-49.1 (Sta 167+66, 21.5' L)	1 EA & 1 EA
ST-44.1 (Sta 162+60, 21.5' L) & ST-49.3 (Sta 167+66, 21.5' R)	1 EA & 1 EA

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12TH AVENUE NORTH RECONSTRUCTION

DRAINAGE LAYOUTS

STA 161+50 - 168+50

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moore engineering, inc.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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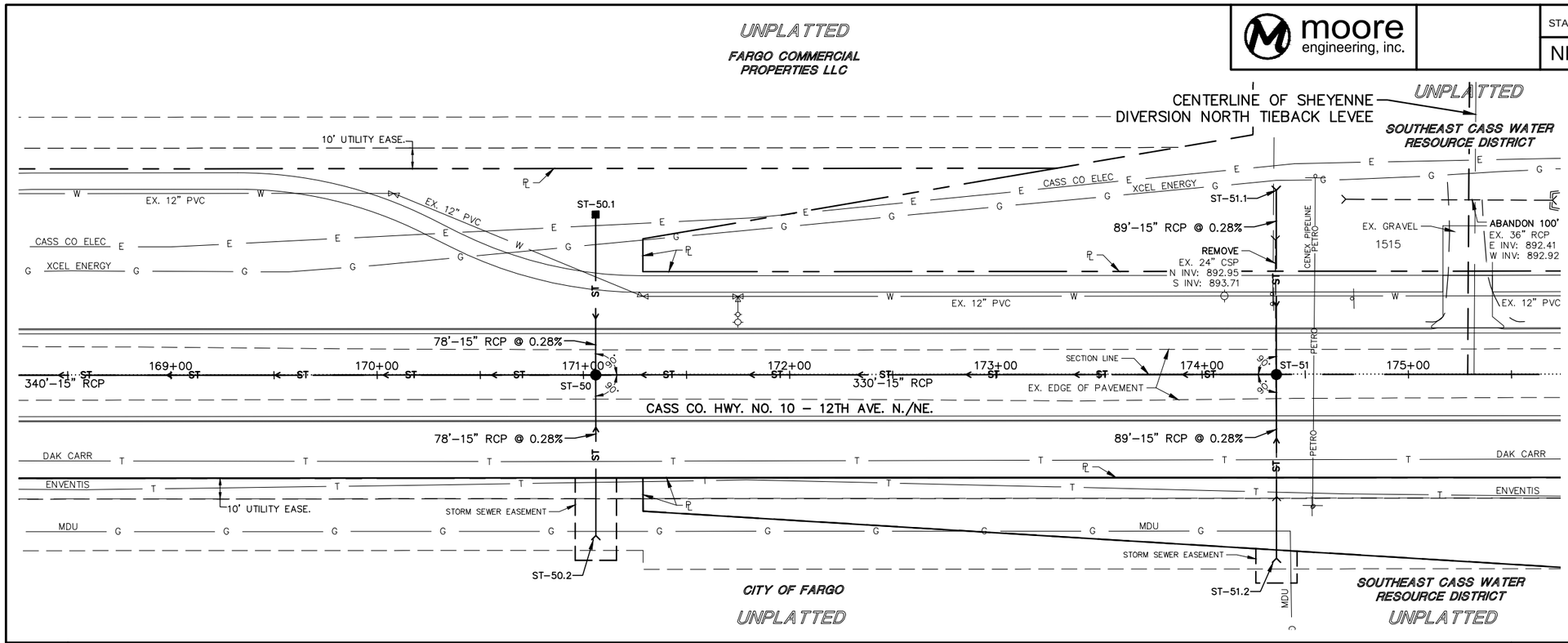

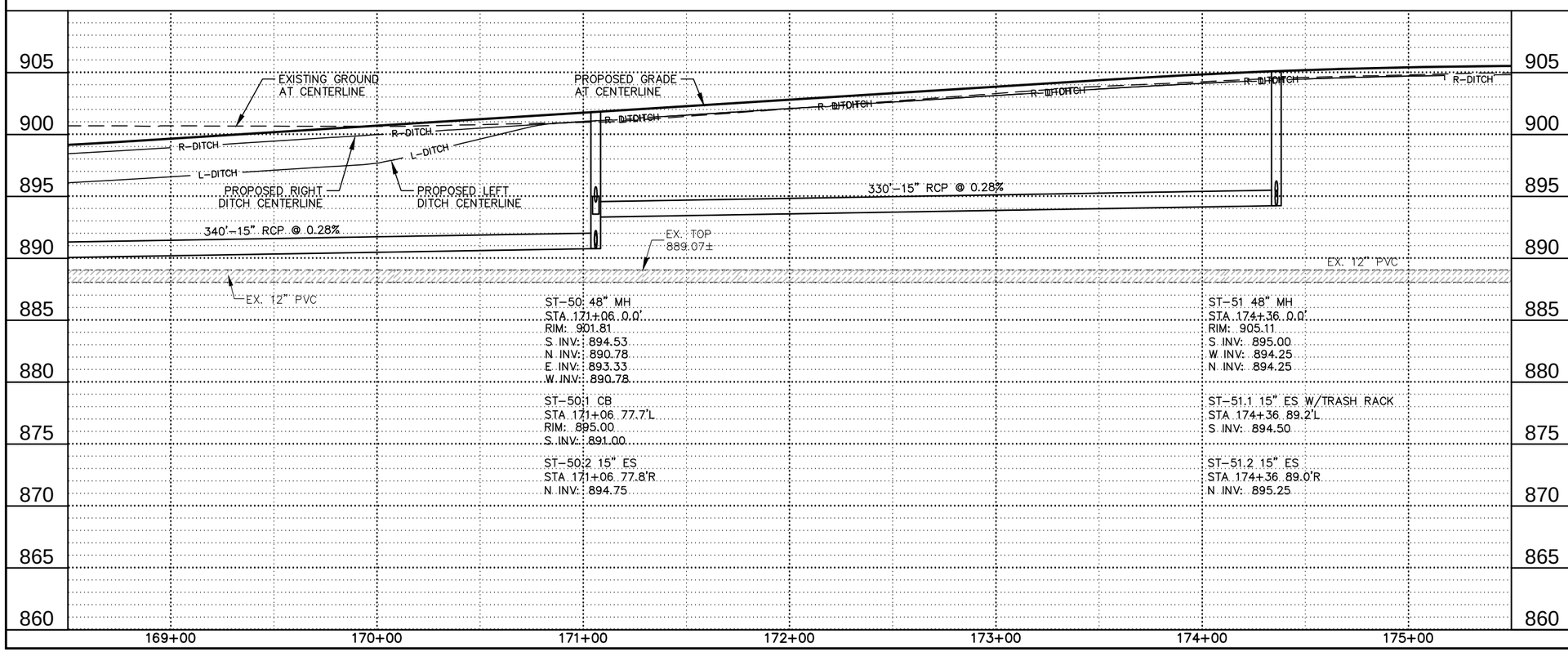

714 210 PIPE CONC REINF 15IN CL III-STORM DRAIN

Sta 168+50 - ST-51 & ST-50 - ST-50.1	586 LF & 78 LF
ST-50 - ST-50.2 & ST-51 - ST-51.1	78 LF & 89 LF
ST-51 - ST-51.2	89 LF

714 3005 END SECT-CONC REINF 15IN

ST-50.2 (Sta 171+06, 77.8' R) & ST-51.1 (Sta 174+36, 89.2' L)	1 EA & 1 EA
ST-51.2 (Sta 174+36, 89.0' R)	1 EA

714 9680 PLUG PIPE - ALL TYPES AND SIZES

Sta 175+70, 84.3'L	1 EA

722 100 MANHOLE 48IN

ST-50 (Sta 171+06, 0.0') & ST-51 (Sta 174+36,0.0')	1 EA & 1 EA

722 3499 INLET

ST-50.1 (Sta 171+06, 77.7' L)	1 EA

910 480 TRASH RACK

ST-51.1 (Sta 174+36, 89.2' L)	1 EA

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Scale in Feet

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12TH AVENUE NORTH RECONSTRUCTION

DRAINAGE LAYOUTS

STA 168+50 - 175+50

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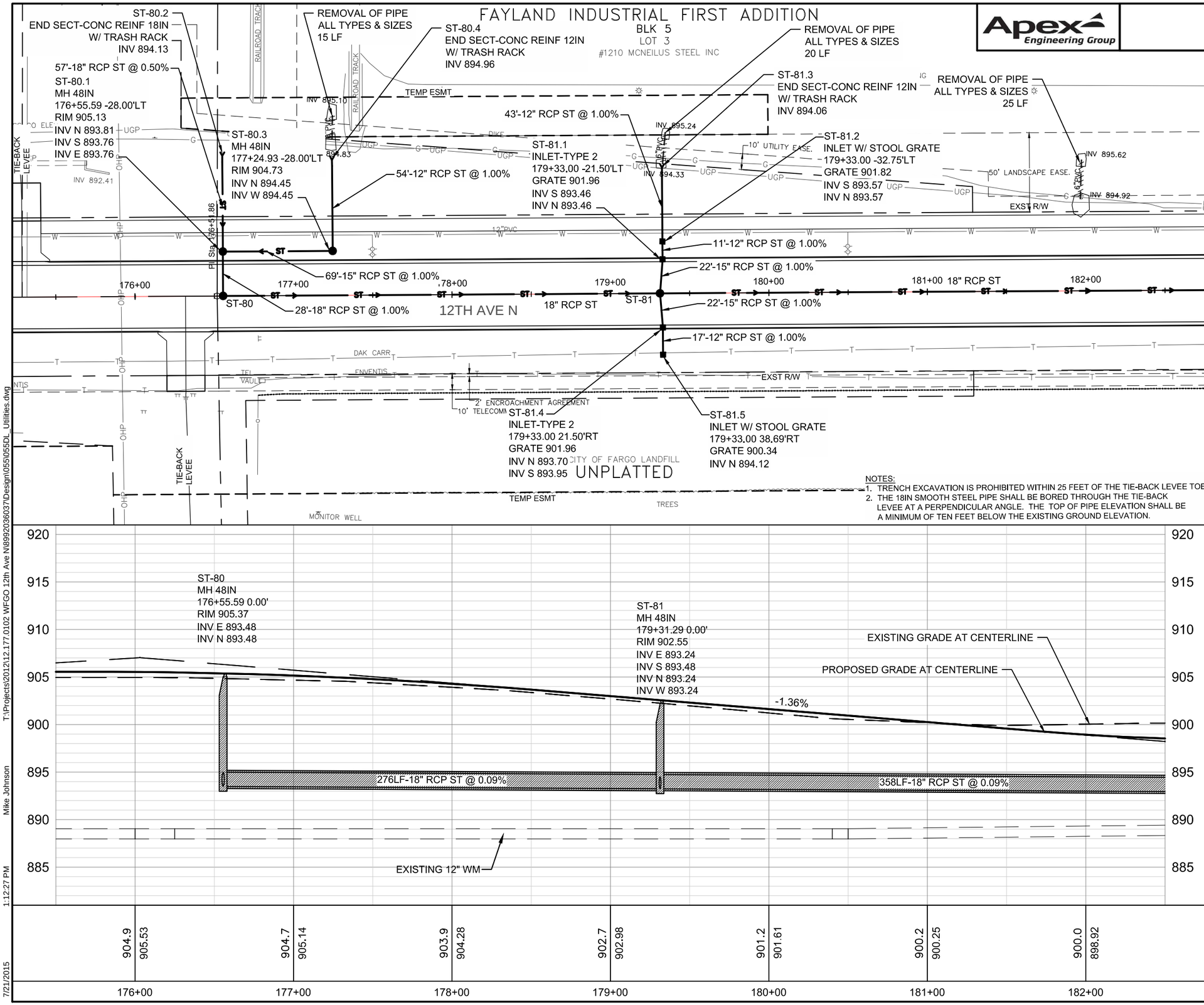

202 174 REMOVAL OF PIPE ALL TYPES AND SIZES

Sta 177+25 - 106' LT (6" PVC)	15 LF
Sta 179+34 - 92' LT (6" PVC)	20 LF
Sta 181+97 - 70' LT (6" PVC)	25 LF

714 0115 PIPE CONC REINF 12IN CL III-STORM DRAIN

ST-80.3 TO ST-80.4	54 LF
ST-81.1 TO ST-81.2	11 LF
ST-81.2 TO ST-81.3	43 LF
ST-81.4 TO ST-81.5	17 LF

714 0210 PIPE CONC REINF 15IN CL III-STORM DRAIN

ST-80.1 TO ST-80.3	69 LF
ST-81 TO ST-81.1	22 LF
ST-81 TO ST-81.4	22 LF

714 0315 PIPE CONC REINF 18IN CL III-STORM DRAIN

ST-80 TO ST-80.1	28 LF
ST-80.1 TO ST-80.2	57 LF
ST-80 TO ST-81	276 LF
ST-81 TO ST-82	358 LF

714 3000 END SECT-CONC REINF 12IN

ST-80.4 & ST-81.3	2 EA

714 3010 END SECT-CONC REINF 18IN

ST-80.2	1 EA

722 0100 MANHOLE 48IN

ST-80, ST-80.1, ST-80.3, & ST-81	4 EA

722 3499 INLET

ST-81.2 & ST-81.5	2 EA

722 3510 INLET-TYPE 2

ST-81.1 & ST-81.4	2 EA

910 0480 TRASH RACK

ST-80.2, ST-80.3, & ST-81.3	3 EA

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12TH AVENUE NORTH RECONSTRUCTION

STORM SEWER

STA 175+50 - 182+50

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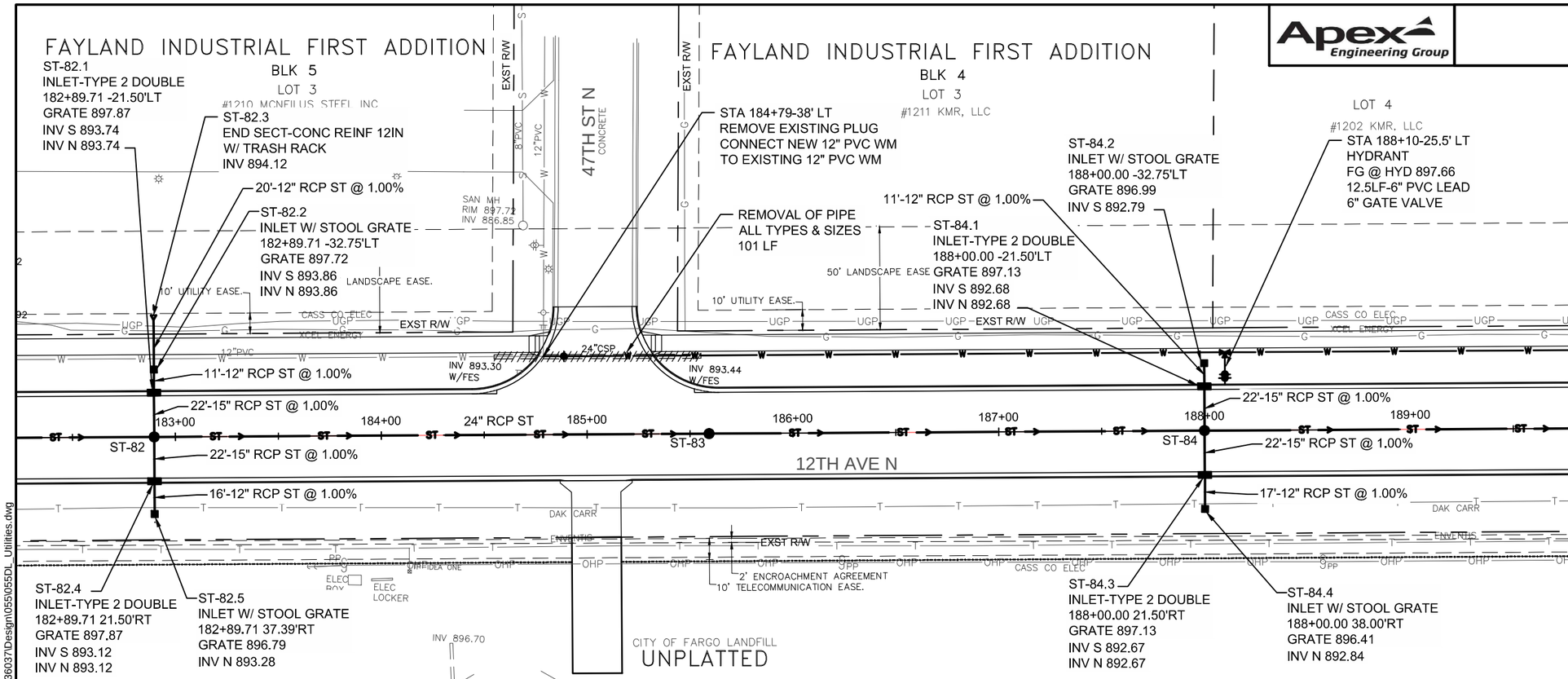
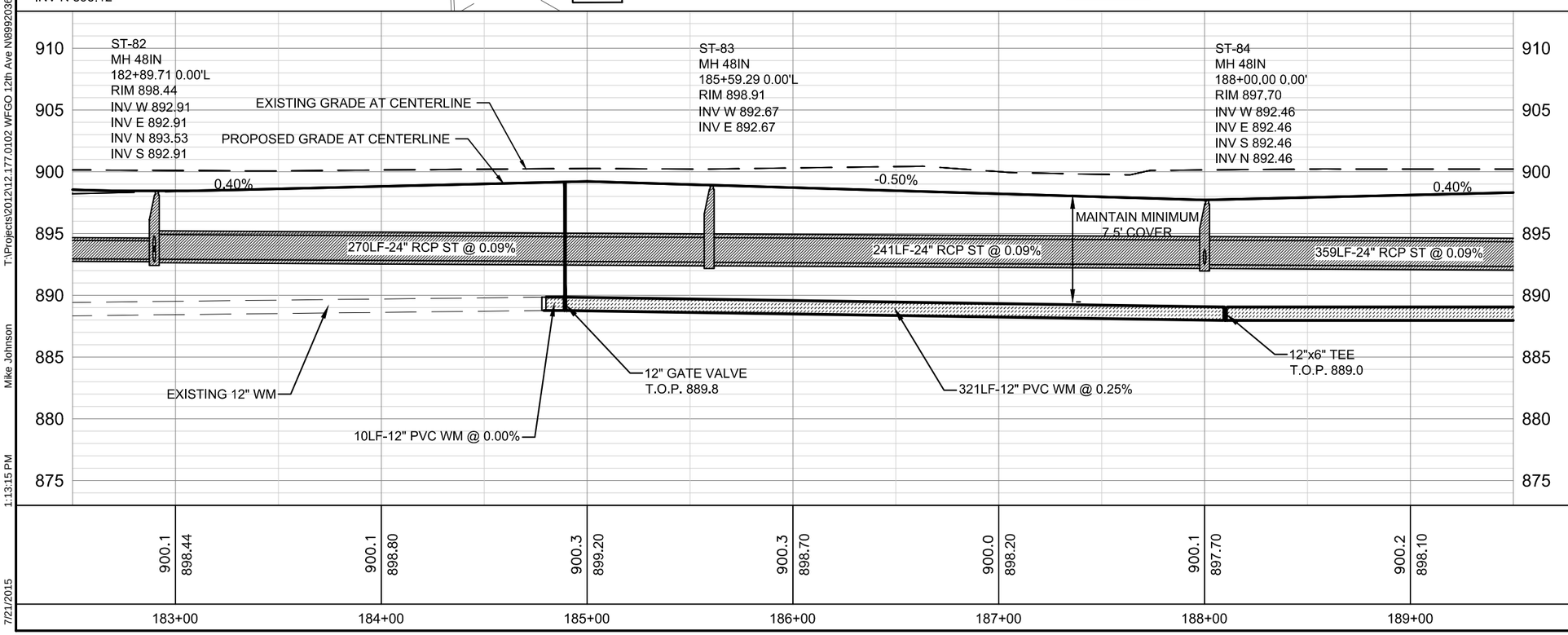
ND	SU-8-992(036)037	55	18

Apex Engineering Group





202 174 REMOVAL OF PIPE ALL TYPES AND SIZES	
Sta 184+79 - 59' LT (12" PVC)	101 LF
Sta 185+05 - 38' LT (24" CSP)	14 LF
714 0115 PIPE CONC REINF 12IN CL III-STORM DRAIN	
ST-82.1 TO ST-82.2	11 LF
ST-82.2 TO ST-82.3	20 LF
ST-82.4 TO ST-82.5	16 LF
ST-84.1 TO ST-84.2	11 LF
ST-84.3 TO ST-84.4	17 LF
714 0210 PIPE CONC REINF 15IN CL III-STORM DRAIN	
ST-82 TO ST-82.1	22 LF
ST-82 TO ST-82.4	22 LF
ST-84 TO ST-84.1	22 LF
ST-84 TO ST-84.3	22 LF
714 0620 PIPE CONC REINF 24IN CL III-STORM DRAIN	
ST-82 TO ST-83	270 LF
ST-83 TO ST-84	241 LF
ST-84 TO ST-85	359 LF
714 3000 END SECT-CONC REINF 12IN	
ST-82.3	1 EA
722 0100 MANHOLE 48IN	
ST-82, ST-83, & ST-84	3 EA
722 3499 INLET	
ST-82.2, ST-82.5, ST-84.2, & ST-84.4	4 EA
722 3520 INLET-TYPE 2 DOUBLE	
ST-82.1, ST-82.4, ST-84.1, & ST-84.3	4 EA
724 0210 FITTINGS-DUCTILE IRON	
Sta 188+10 - 38' LT (12"x6" TEE)	325 LBS
724 0300 GATE VALVE & BOX 6IN	
Sta 188+10 - 27' LT	1 EA
724 0314 GATE VALVE & BOX 12IN	
Sta 184+89 - 38' LT	1 EA
724 0410 HYDRANT-INSTALL 5IN	
Sta 188+08 - 34.5' LT	1 EA
724 0810 WATERMAIN 6IN PVC	
Sta 188+10 - 25.5' LT to Sta 188+10 - 38' LT	12.5 LF
724 0850 WATERMAIN 12IN PVC	
Sta 184+79 - 38' LT to Sta 189+50 - 38' LT	471 LF
724 0944 CONNECTION TO EXISTING MAIN	
Sta 184+79 - 38' LT	1 EA
910 0480 TRASH RACK	
ST-82.3	1 EA

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12TH AVENUE NORTH RECONSTRUCTION

STORM SEWER & WATER

STA 182+50 - 189+50

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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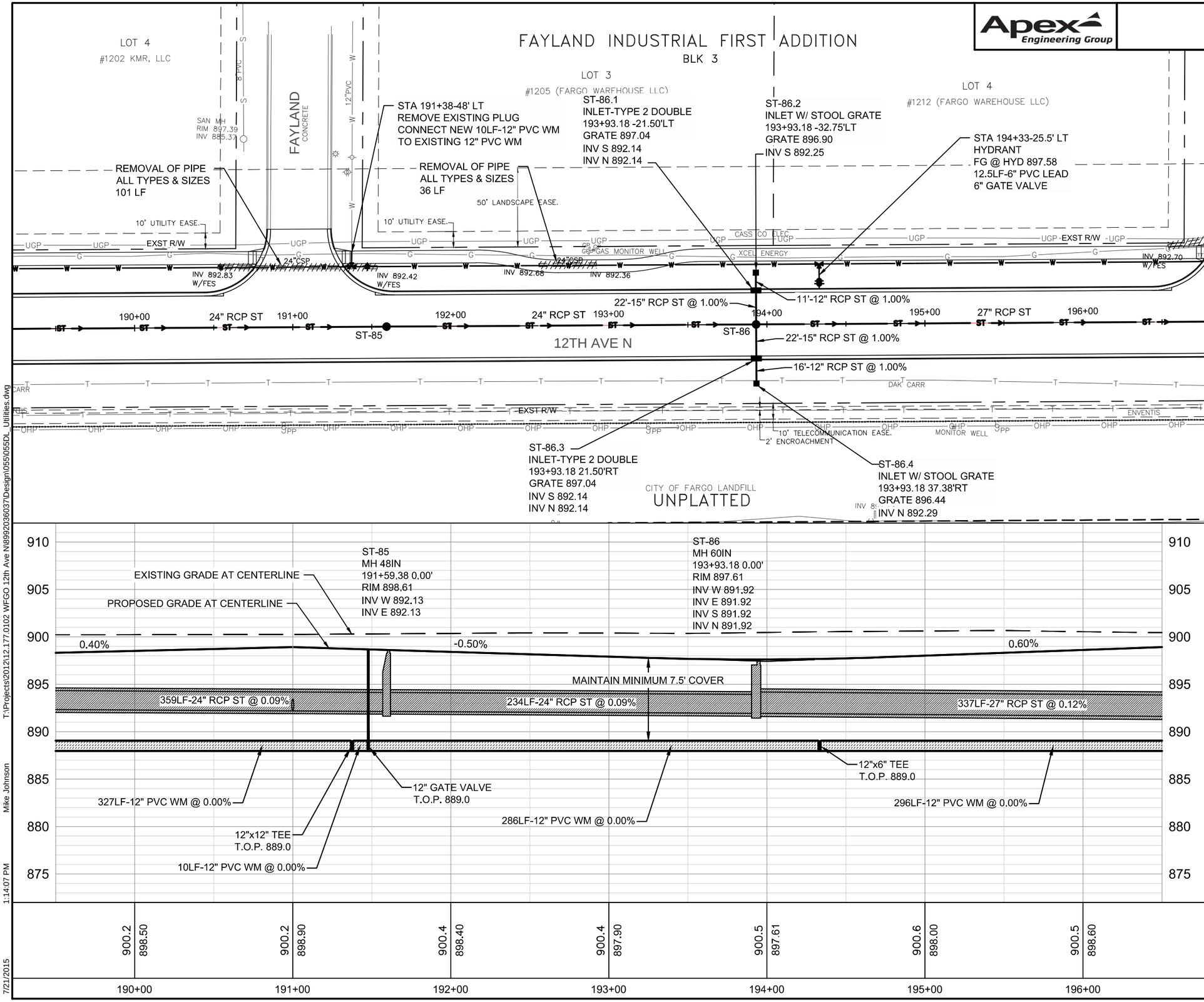
Apex Engineering Group



202 174 REMOVAL OF PIPE ALL TYPES AND SIZES
Sta 191+03 - 38' LT (24" CSP) 101 LF
Sta 192+74 - 38' LT (24" CSP) 36 LF

714 0115 PIPE CONC REINF 12IN CL III-STORM DRAIN
ST-86.1 TO ST-86.2 11 LF
ST-86.3 TO ST-86.4 16 LF

714 0210 PIPE CONC REINF 15IN CL III-STORM DRAIN
ST-86 TO ST-86.1 22 LF
ST-86 TO ST-86.3 22 LF

714 0620 PIPE CONC REINF 24IN CL III-STORM DRAIN
ST-85 TO ST-86 229 LF

714 0710 PIPE CONC REINF 27IN CL III-STORM DRAIN
ST-86 TO ST-87 337 LF

722 0100 MANHOLE 48IN
ST-85 1 EA

722 0110 MANHOLE 60IN
ST-86 1 EA

722 3499 INLET
ST-86.2 & ST-86.4 2 EA

722 3520 INLET-TYPE 2 DOUBLE
ST-86.1 & ST-86.3 2 EA

724 0210 FITTINGS-DUCTILE IRON
Sta 191+38 - 38' LT (12"x12" TEE) 410 LBS
Sta 191+38 - 48' LT (12" SLEEVE) 76 LBS
Sta 194+33 - 38' LT (12"x6" TEE) 325 LBS

724 0300 GATE VALVE & BOX 6IN
Sta 194+33 - 28.5' LT 1 EA

724 0314 GATE VALVE & BOX 12IN
Sta 191+48 - 38' LT 1 EA

724 0410 HYDRANT-INSTALL 5IN
Sta 194+33 - 25.5' LT 1 EA

724 0810 WATERMAIN 6IN PVC
Sta 194+33 - 25.5' LT to Sta 194+33 - 38' LT 12.5

724 0850 WATERMAIN 12IN PVC
Sta 189+50 - 38' LT to Sta 196+50 - 38' LT 700 LF
Sta 191+38 - 48' LT to Sta 191+38 - 38' LT 10 LF
Sta 194+33 - 25.5' LT to Sta 194+33 - 38' LT 13 LF

724 0944 CONNECTION TO EXISTING MAIN
Sta 191+38 - 48' LT 1 EA

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12TH AVENUE NORTH RECONSTRUCTION

STORM SEWER & WATER

STA 189+50 - 196+50

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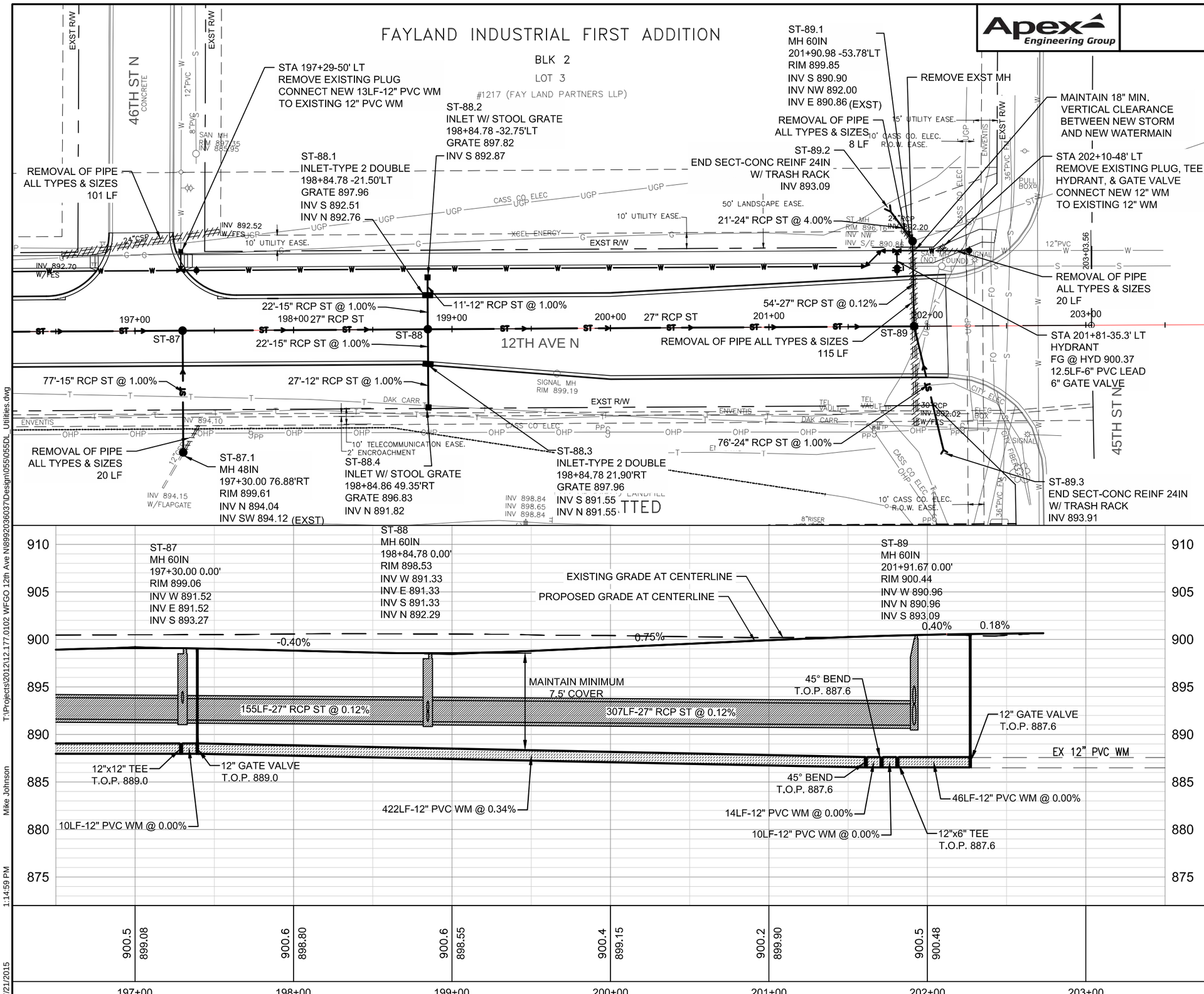
Apex Engineering Group



202 174 REMOVAL OF PIPE ALL TYPES AND SIZES	
Sta 197+04 - 55' LT (24" CSP)	101 LF
Sta 197+35 - 68' RT (12" PVC)	20 LF
Sta 201+88 - 58' LT (24" CSP)	8 LF
Sta 201+92 - 00' LT (30" RCP)	115 LF
Sta 202+07 - 48' LT (12" PVC WM)	20 LF
202 0210 REMOVAL OF MANHOLES	
Sta 201+90.98 - 53.78' LT	1 EA
714 0115 PIPE CONC REINF 12IN CL III-STORM DRAIN	
ST-88.1 TO ST-88.2	11 LF
ST-88.3 TO ST-88.4	27 LF
714 0210 PIPE CONC REINF 15IN CL III-STORM DRAIN	
ST-87 TO ST-87.1	77 LF
ST-88 TO ST-88.1	22 LF
ST-88 TO ST-88.3	22 LF
714 0620 PIPE CONC REINF 24IN CL III-STORM DRAIN	
ST-89.1 TO ST-89.2	21 LF
ST-89 TO ST-89.3	76 LF
714 0710 PIPE CONC REINF 27IN CL III-STORM DRAIN	
ST-87 TO ST-88	155 LF
ST-88 TO ST-89	307 LF
ST-89 TO ST-89.1	54 LF
714 3020 END SECT-CONC REINF 24IN	
ST-89.2 & ST-89.3	2 EA
722 0100 MANHOLE 48IN	
ST-87.1	1 EA
722 0110 MANHOLE 60IN	
ST-87, ST-88, ST-89 & ST-89.1	4 EA
722 3499 INLET	
ST-88.2 & ST-88.4	2 EA
722 3520 INLET-TYPE 2 DOUBLE	
ST-88.1 & ST-88.3	2 EA
724 0210 FITTINGS-DUCTILE IRON	
Sta 197+29 - 38' LT (12"x12" TEE)	410 LBS
Sta 197+29 - 50' LT (12" SLEEVE)	76 LBS
Sta 201+61 - 38' LT (45° BEND)	255 LBS
Sta 201+71 - 48' LT (45° BEND)	255 LBS
Sta 201+81 - 48' LT (12"x6" TEE)	325 LBS
724 0270 REMOVE GATE VALVE & BOX	
Sta 202+10 - 48' LT	1 EA
724 0300 GATE VALVE & BOX 6IN	
Sta 201+81 - 37' LT	1 EA
724 0314 GATE VALVE & BOX 12IN	
Sta 197+39 - 38' LT	1 EA
Sta 202+27 - 48' LT	1 EA
724 0410 HYDRANT INSTALL-5IN	
Sta 201+81 - 35' LT	1 EA
724 0430 REMOVE HYDRANT	
Sta 202+10-48' LT	1 EA
724 0810 WATERMAIN 6IN PVC	
Sta 201+81 - 35' LT to Sta 201+81 - 48' LT	13 LF
724 0850 WATERMAIN 12IN PVC	
Sta 196+50 - 38' LT to Sta 201+61 - 38' LT	511 LF
Sta 197+29 - 50' LT to Sta 197+29 - 38' LT	13 LF
Sta 201+61 - 38' LT to Sta 202+27 - 48' LT	70 LF
724 0944 CONNECTION TO EXISTING MAIN	
Sta 197+29 - 50' LT	1 EA
Sta 202+27 - 48' LT	1 EA
910 0480 TRASH RACK	
ST-89.2 & ST-89.3	2 EA

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12TH AVENUE NORTH RECONSTRUCTION

STORM SEWER & WATER

STA 196+50 - 203+50

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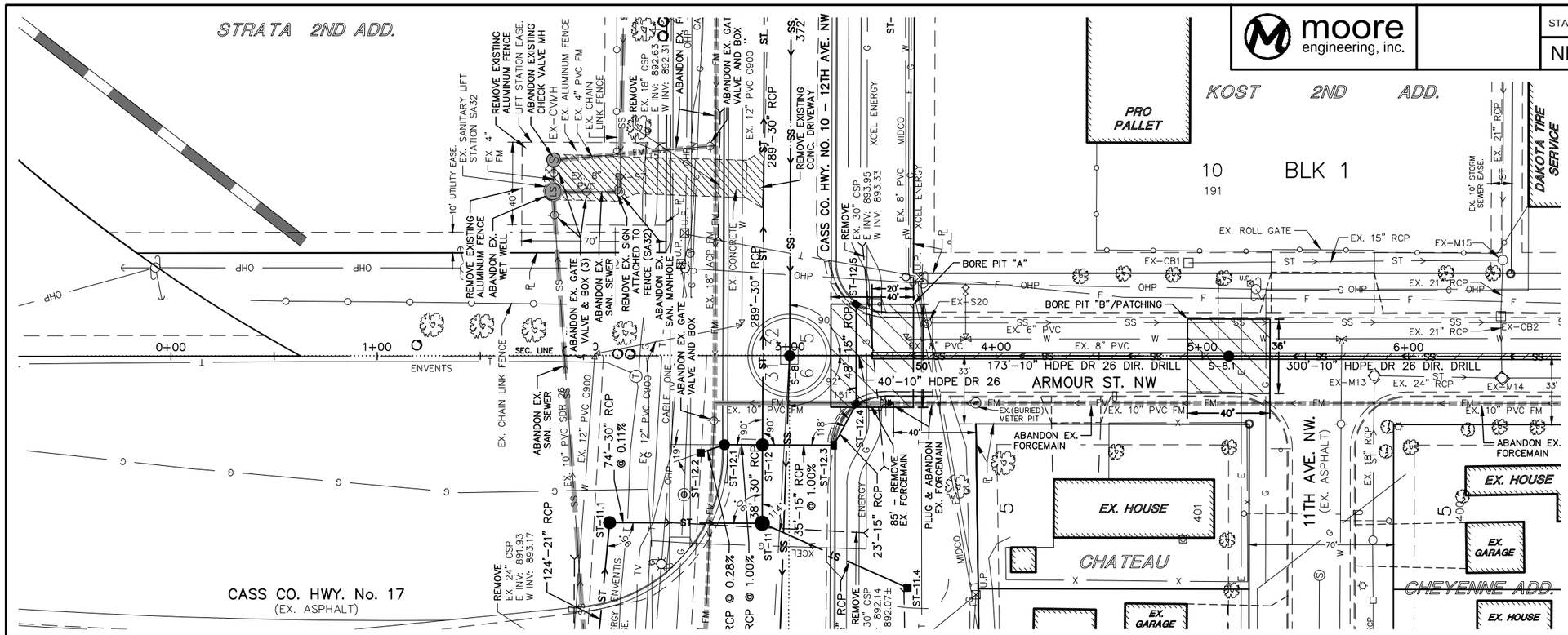
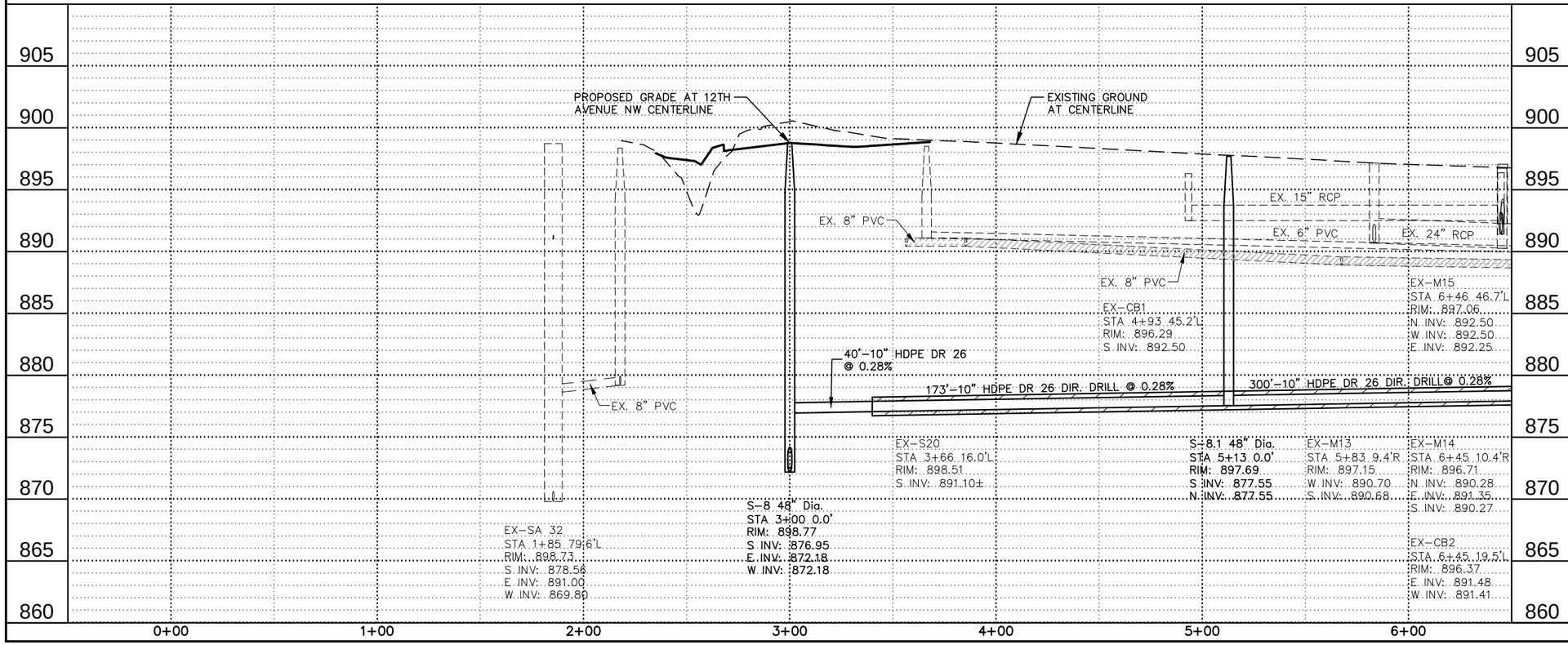
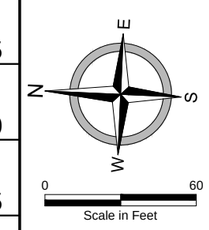




430 2000 PATCHING	
BORE PIT "B" (Sta 4+93 - 5+33)	53 TON
722 300 MANHOLE SANITARY	
S-8.1 (Sta 5+13, 0.0')	1 EA
724 1118 15IN SANITARY SEWER PIPE	
Sta 3+00 - 6+50	350 LF



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12TH AVENUE NORTH RECONSTRUCTION

DRAINAGE LAYOUTS

STA 0+00 - 6+50

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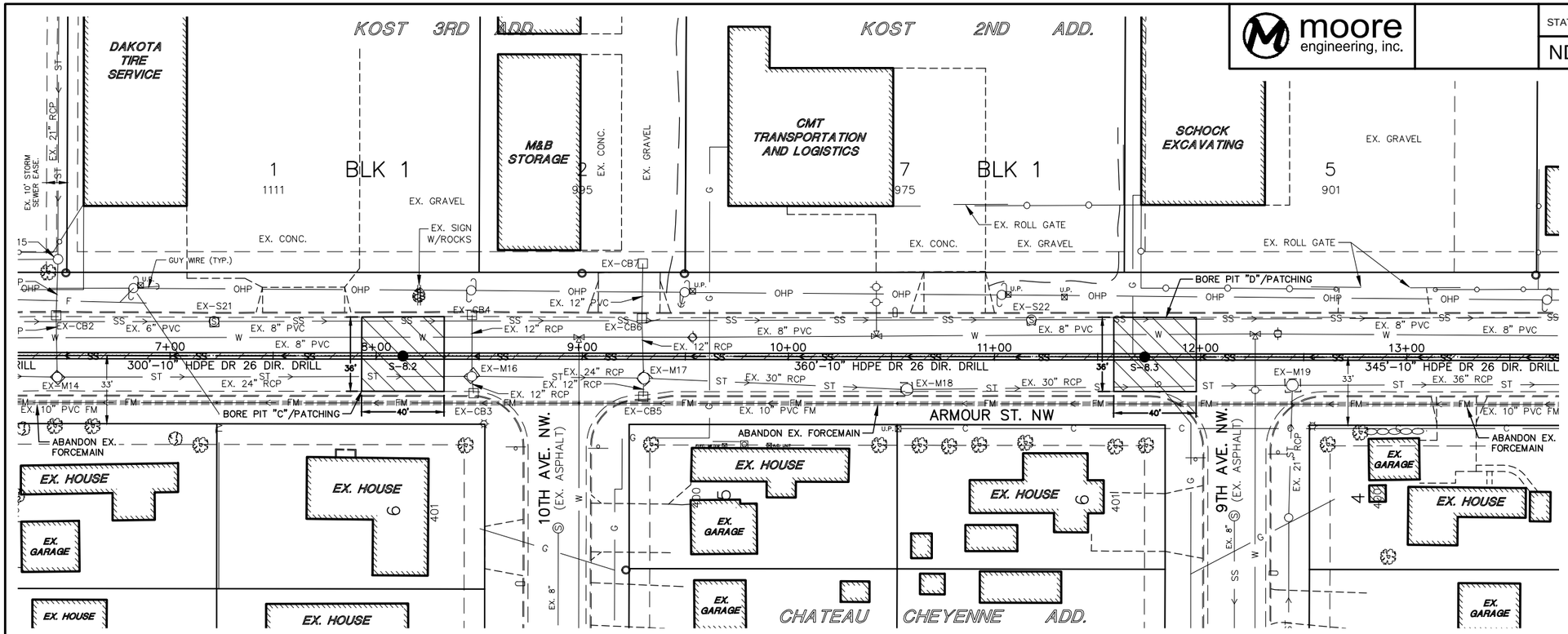
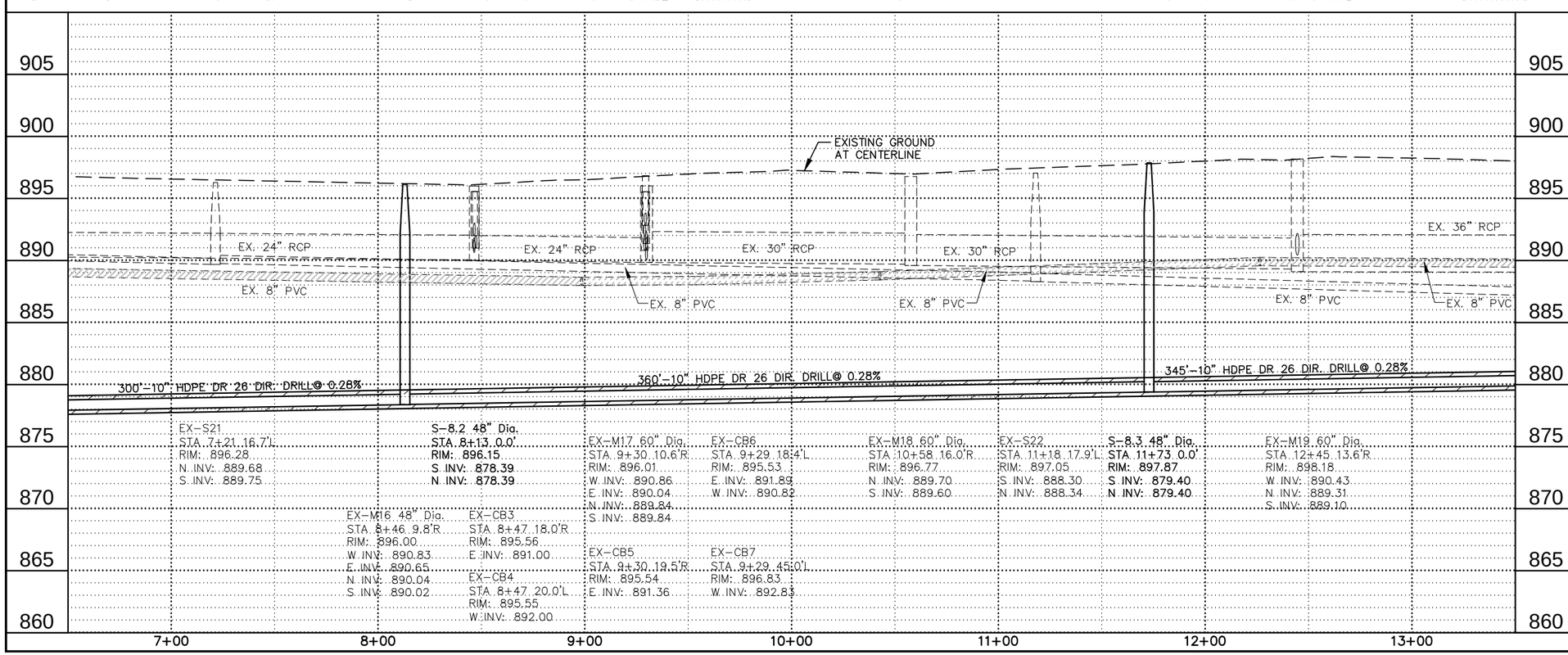
moore engineering, inc.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	55	22





430 2000 PATCHING

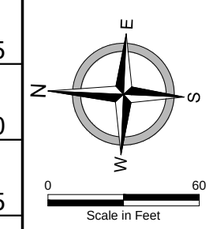
BORE PIT "C" (Sta 7+93 - 8+33)	53 TON
BORE PIT "D" (Sta 11+58 - 11+98)	53 TON

722 300 MANHOLE SANITARY

S-8.2 (Sta 8+13, 0.0')	1 EA
S-8.3 (Sta 11+73, 0.0')	1 EA

724 1118 15IN SANITARY SEWER PIPE

Sta 6+50 - 13+50	700 LF



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12TH AVENUE NORTH RECONSTRUCTION

DRAINAGE LAYOUTS

STA 6+50 - 13+50

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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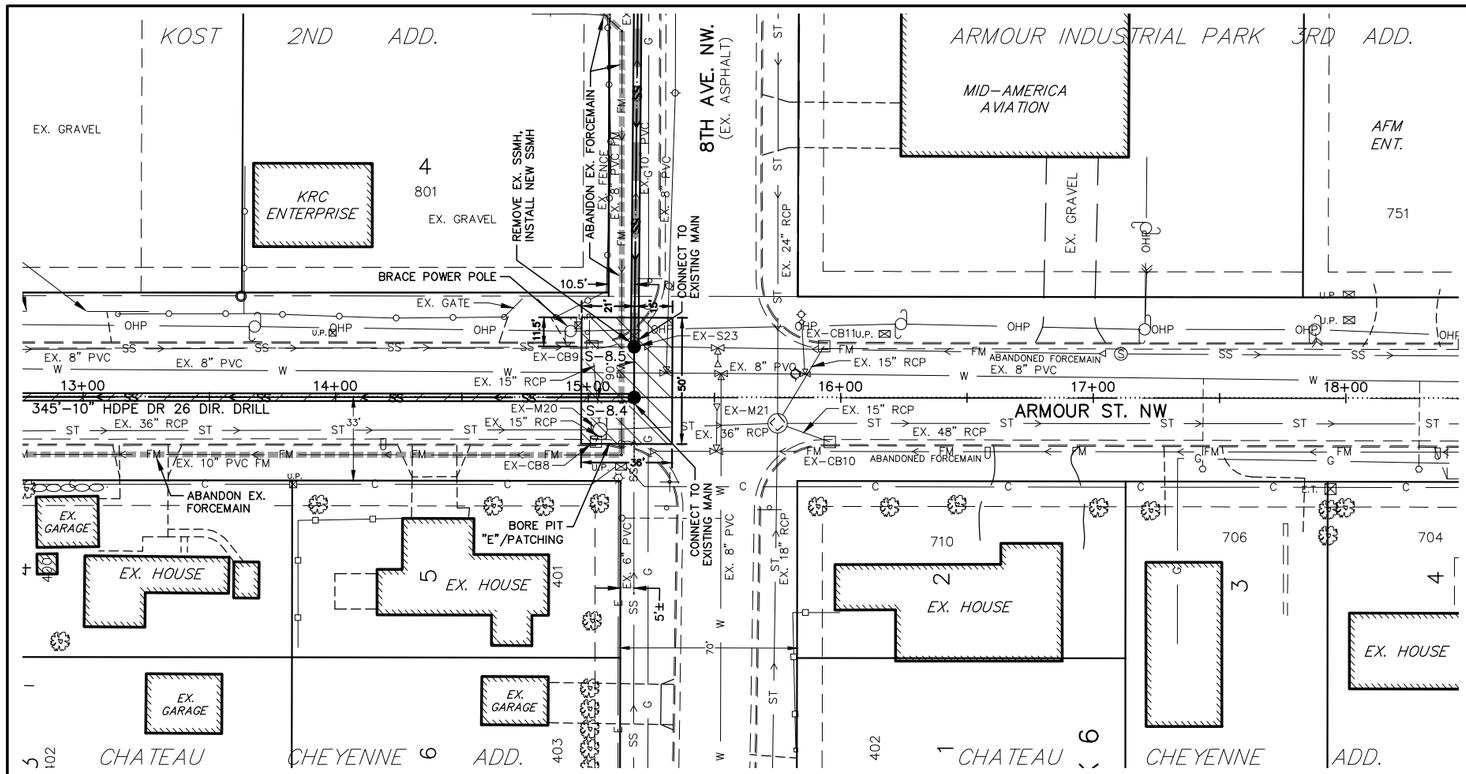
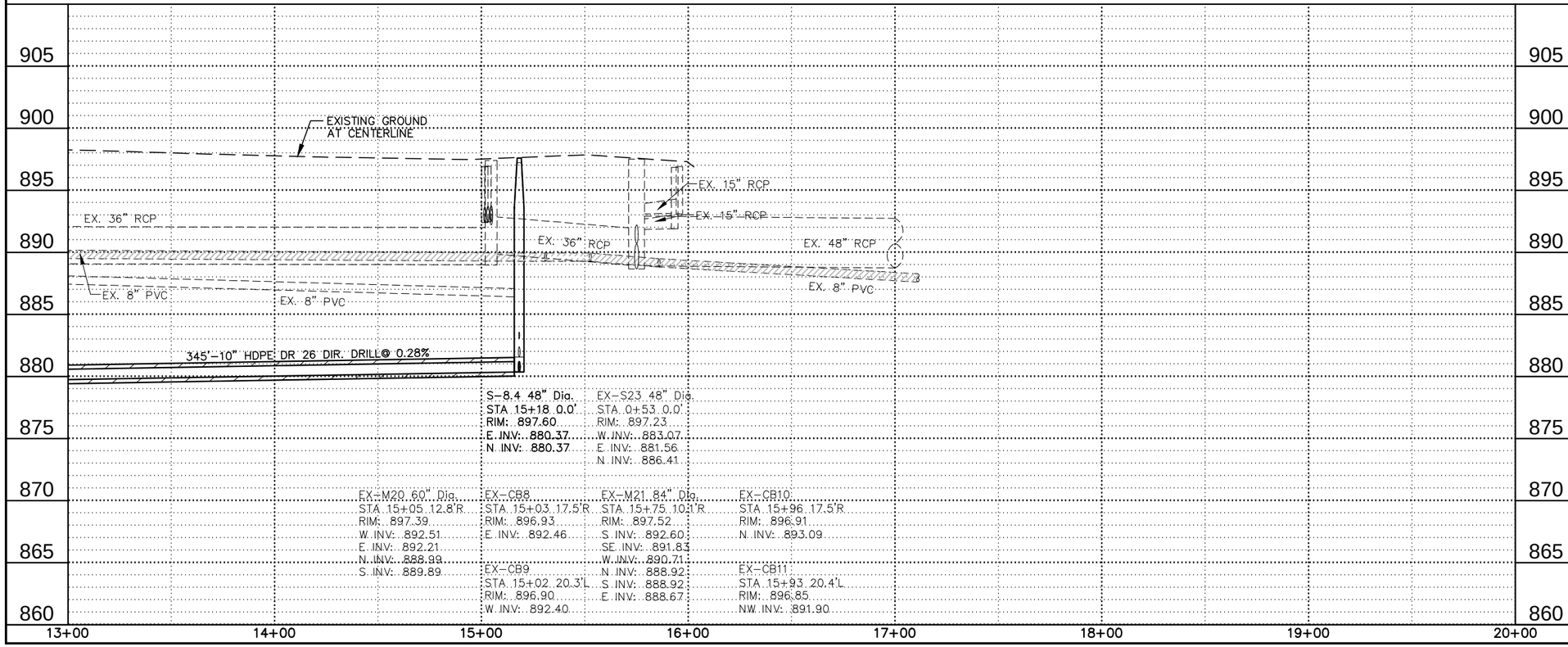


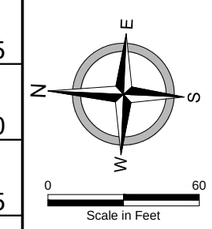


430 2000 PATCHING
BORE PIT "E" (Sta 14+97 - 15+33) 66 TON

722 300 MANHOLE SANITARY
S-8.4 (Sta 15+18, 0.0') 1 EA

724 944 CONNECTION TO EXISTING MAIN
S-8.4 (Sta 15+18, 0.0') 1 EA

724 1118 15IN SANITARY SEWER PIPE
Sta 13+50 - 15+18 168 LF



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12TH AVENUE NORTH RECONSTRUCTION

DRAINAGE LAYOUTS

STA 13+50 - 17+00

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moore engineering, inc.

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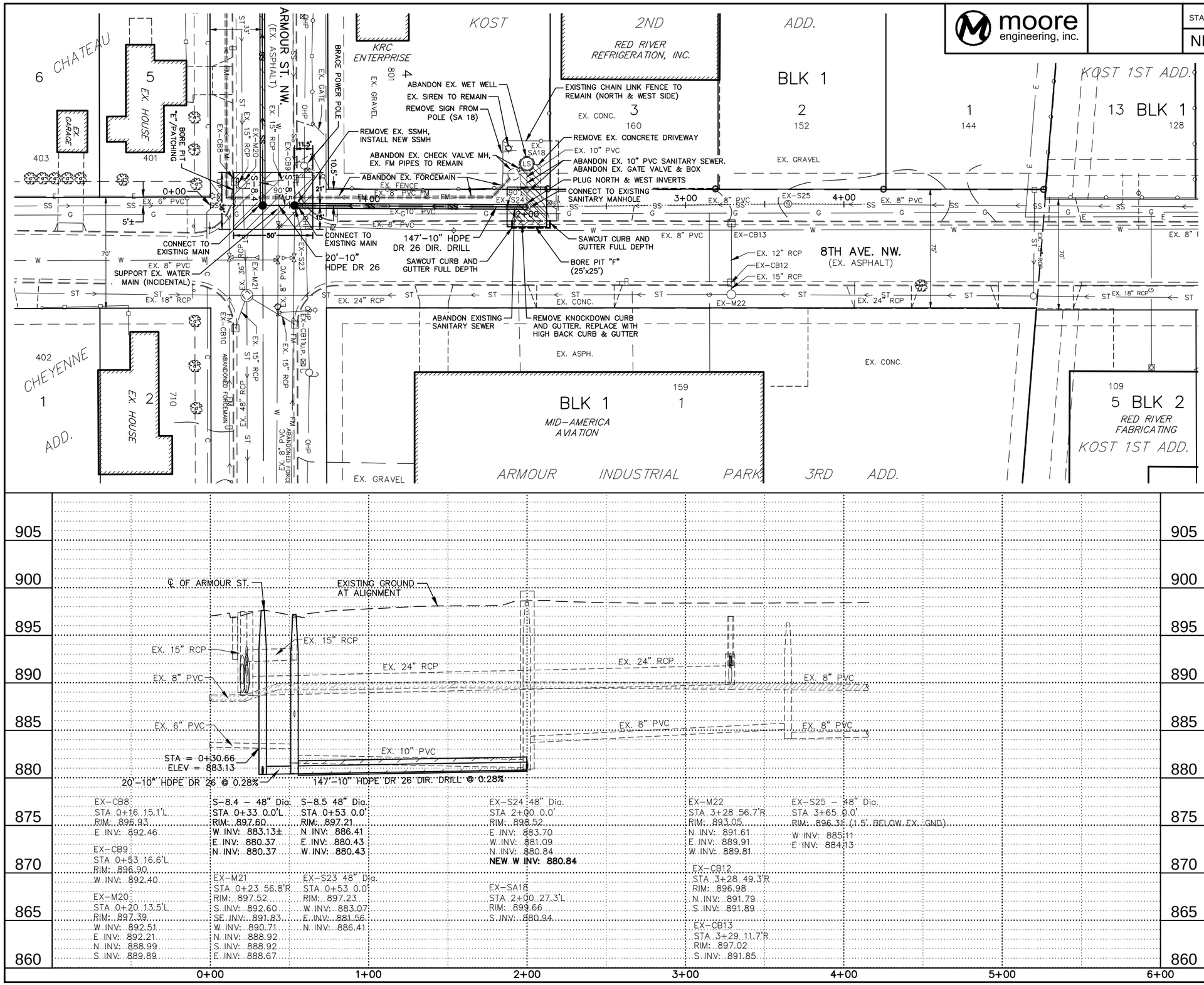

202 130	REMOVAL OF CURB & GUTTER	
Sta 1+90 - 2+14		24 LF
722 300	MANHOLE SANITARY	
S-8.5 (Sta 0+53, 0.0')		1 EA
724 944	CONNECTION TO EXISTING MAIN	
S-8.5 (Sta 0+53, 0.0')		1 EA
EX-S24 (Sta 2+00, 0.0')		1 EA
724 1118	15IN SANITARY SEWER PIPE	
Sta 0+33 - 2+00		167 LF
748 190	CURB & GUTTER-TYPE 1 30IN	
Sta 1+90 - 2+14		24 LF
910 570	MODIFY MANHOLE	
EX-S24 (Sta 2+00, 0.0')		1 EA

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Scale in Feet

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12TH AVENUE NORTH RECONSTRUCTION

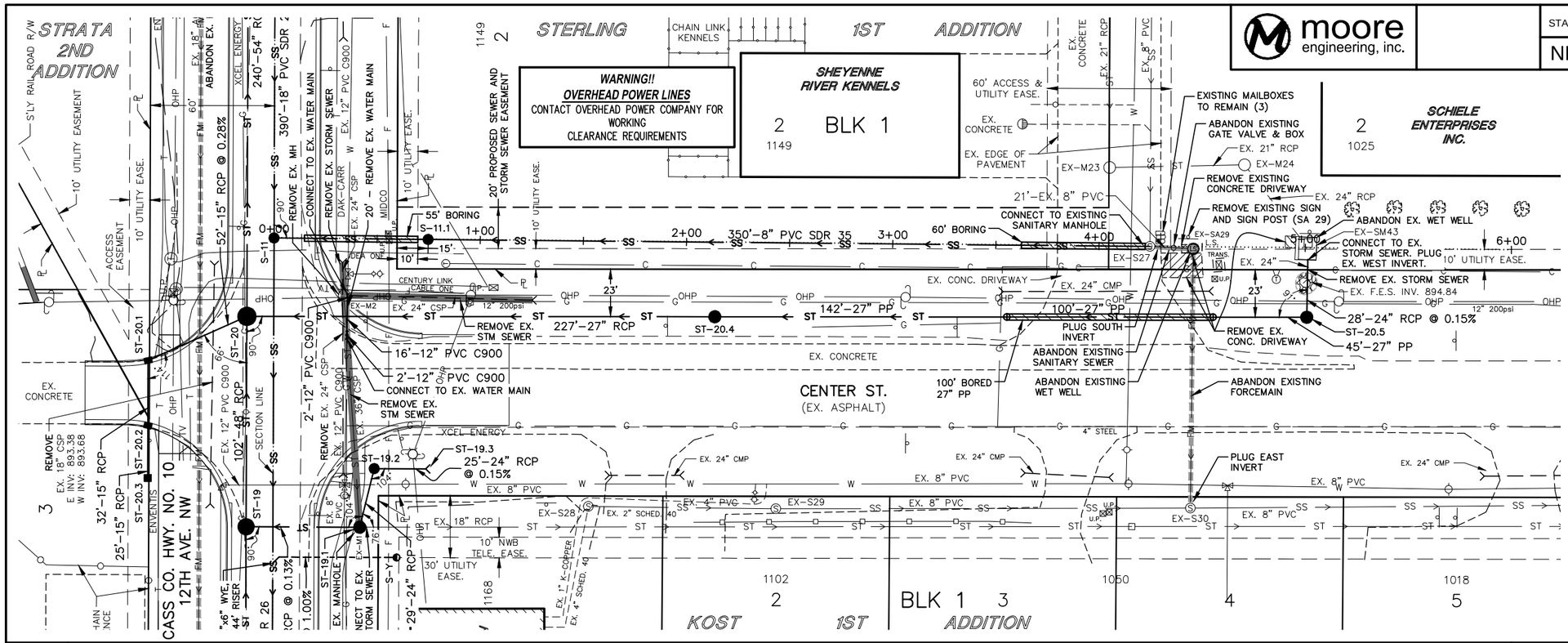
DRAINAGE LAYOUTS

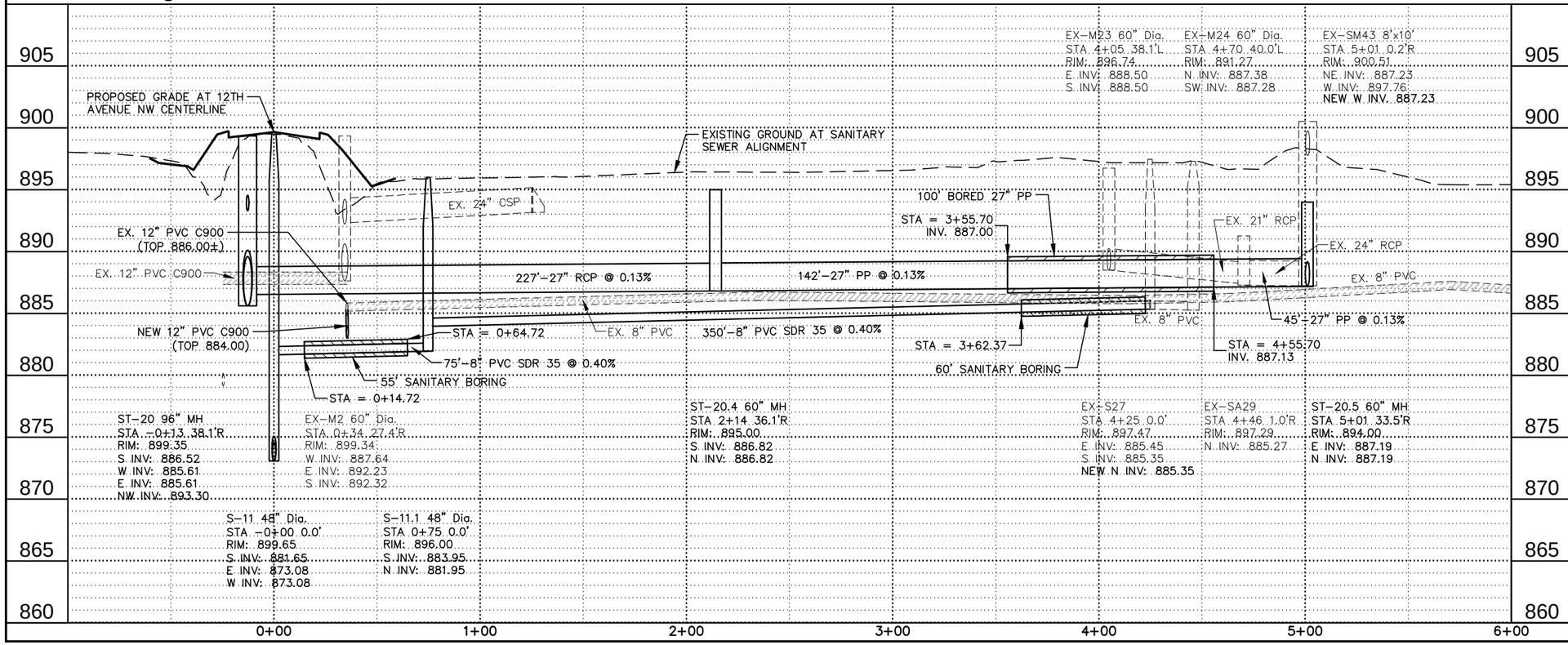
STA 0+00 - 4+00

FILE LOCATION: R:\Civil 3D Projects\16843\DRAWINGS\DESIGN\16843-PP.dwg

moore engineering, inc.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	55	25





714 620 PIPE CONC REINF 24IN CL III-STORM DRAIN
ST-20.5 - EX-SM43 — 28 LF

714 710 PIPE CONC REINF 27IN CL III-STORM DRAIN
ST-20 - ST-20.4 — 227 LF

714 4108 PIPE CONDUIT 27IN
ST-20.4 - ST-20.5 — 187 LF

714 4163 PIPE CONDUIT 27IN - JACKED OR BORED
Sta 3+55.70, 34.8' R - Sta 4+55.70, 34.0' R — 100 LF

722 110 MANHOLE 60IN
ST-20.4 (Sta 2+14, 37.5' R) & ST-20.5 (Sta 5+01, 33.5' R) — 1 EA & 1 EA

722 300 MANHOLE SANITARY
S-11.1 (Sta 0+75, 0.0') — 1 EA

722 2490 MANHOLE STORM CONNECTION
EX-SM43 (Sta 5+01, 2.4' L) & EX-S27 (Sta 4+25, 0.0') — 1 EA & 1 EA

724 210 FITTINGS-DUCTILE IRON
3-12" 45° BENDS (Sta 0+36) — 384 LBS

724 850 WATER MAIN 12IN PVC
Sta 0+36, 27.7' R - 47.7' R — 20 LF

724 944 CONNECTION TO EXISTING MAIN
Sta 0+36, 27.7' R & Sta 0+36, 47.7' R — 1 EA & 1 EA

724 1095 BORE SANITARY SEWER PIPE
Sta 0+14.72 - Sta 0+64.72 & Sta 3+62.37 - Sta 4+22.37 — 55 LF & 60 LF

724 1110 8IN SANITARY SEWER PIPE
S-11 - EX-S27 — 425 LF

910 570 MODIFY MANHOLE
EX-SM43 (Sta 5+01, 0.2' R) — 1 EA
EX-S27 (Sta 4+25, 0.0') — 1 EA
EX-S30 (Sta 4+46, 126.6' R) — 1 EA

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Scale in Feet

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12TH AVENUE NORTH RECONSTRUCTION

DRAINAGE LAYOUTS

STA 0+00 - 4+50

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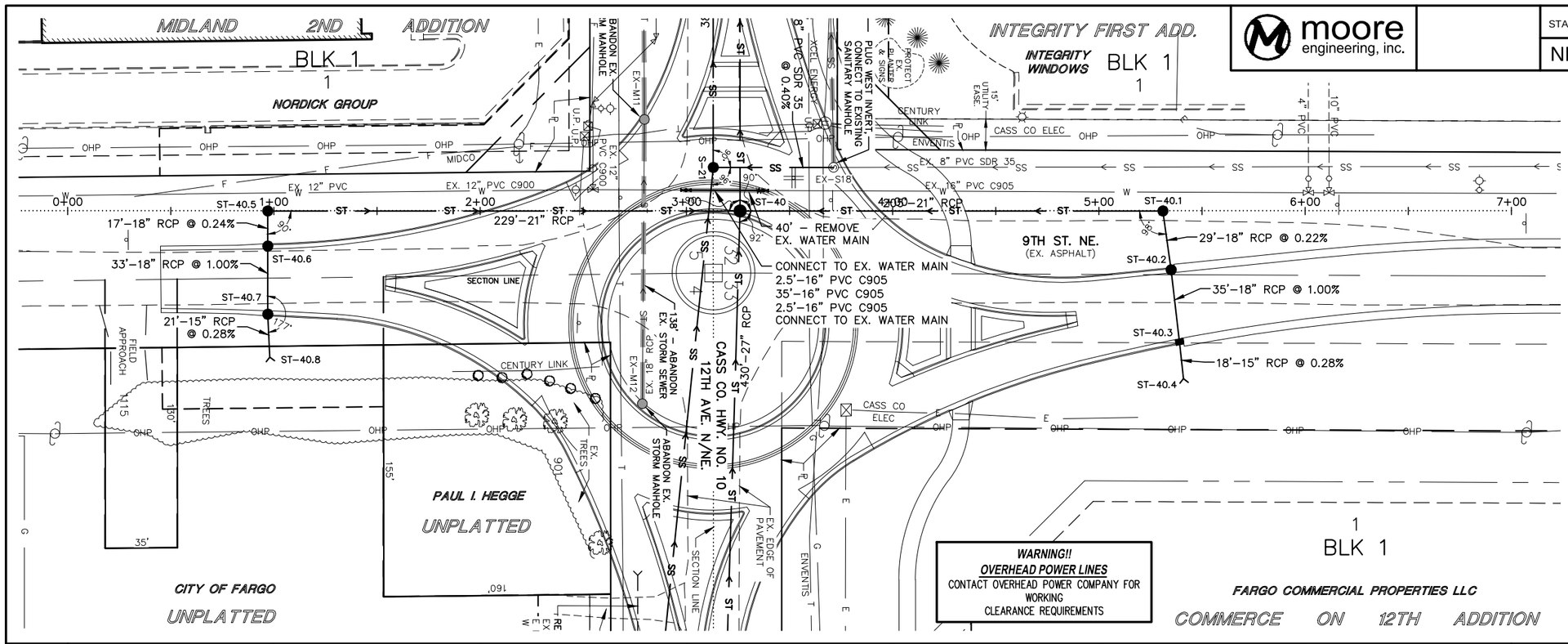
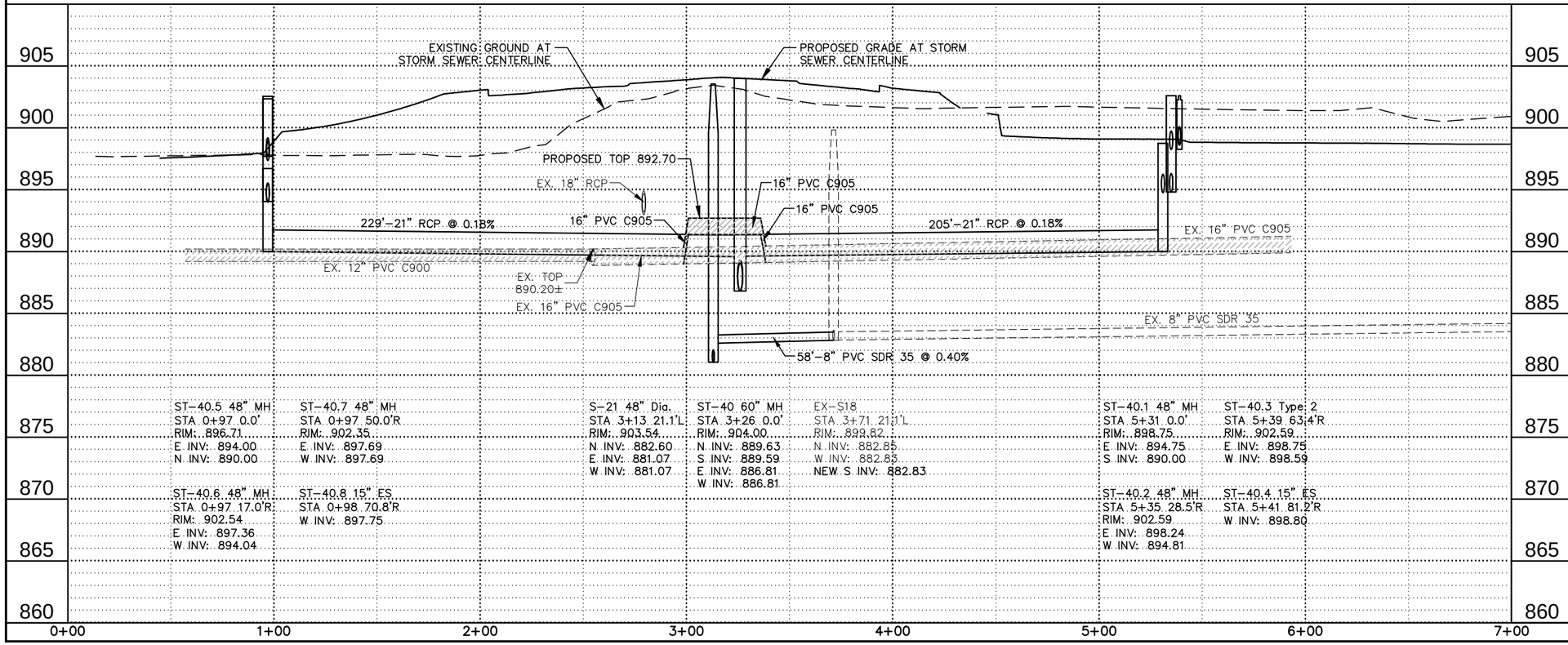
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	55	26

moore engineering, inc.





714 210 PIPE CONC REINF 15IN CL III-STORM DRAIN
ST-40.7 - ST-40.8 & ST-40.3 - ST-40.4 — 21 LF & 18 LF

714 315 PIPE CONC REINF 18IN CL III-STORM DRAIN
ST-40.5 - ST-40.7 & ST-40.1 - ST-40.3 — 50 LF & 64 LF

714 405 PIPE CONC REINF 21IN CL III-STORM DRAIN
ST-40.5 - ST-40.1 — 434 LF

714 3005 END SECT-CONC REINF 15IN
ST-40.8 (Sta 0+98, 71.9' R) & ST-40.4 (Sta 5+41, 81.2' R) — 1 EA & 1 EA

722 100 MANHOLE 48IN
ST-40.5 (Sta 0+97, 0.0') & ST-40.6 (Sta 0+97, 17.0' R) — 1 EA & 1 EA
ST-40.7 (Sta 0+97, 50.0' R) & ST-40.1 (Sta 5+31, 0.0') — 1 EA & 1 EA
ST-40.2 (Sta 5+35, 28.5' R) — 1 EA

722 2490 MANHOLE STORM CONNECTION
EX-S18 (Sta 3+71, 21.1' L) — 1 EA

722 3510 INLET TYPE 2
ST-40.3 (Sta 5+39, 63.4' R) — 1 EA

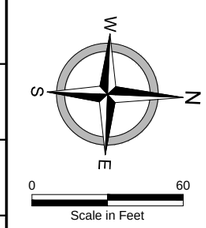
724 210 FITTINGS-DUCTILE IRON
4-16" 45° BENDS (Sta 2+99 - 3+39) — 900 LBS

724 852 WATERMAIN 16IN PVC
Sta 2+99 - 3+39 — 40 LF

724 944 CONNECTION TO EXISTING MAIN
Sta 2+99, 10.1' L — 1 EA
Sta 3+39, 9.9' L — 1 EA

724 1110 8IN SANITARY SEWER PIPE
Sta 149+49 — 58 LF

910 570 MODIFY MANHOLE
EX-S18 (Sta 3+71, 21.1' L — 1 EA



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12TH AVENUE NORTH RECONSTRUCTION

DRAINAGE LAYOUTS

STA 0+00 - 7+00

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FILE LOCATION: R:\Civil 3D Projects\16843\DRAWINGS\DESIGN\16843-COVER-NOTES.dwg

REMOVAL QUANTITIES - STA 68+00 TO 175+32

moore engineering, inc.

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
N.D.	SU-8-992(036)037	20057	55	27

202 170 Removal of Culverts-All Types & Sizes

Section	Sheet	Begin Station/Offset	End Station/Offset	Description	Quantity
55	3	79+49, 50.1' R	79+90, 50.4' R	18"	40 LF
55	5	92+31, 62.5' R	93+48, 59.8' R	30"	119 LF
55	5	92+45, 51.7' L	93+51, 44.6' L	12"	106 LF
55	5	95+43, 103.5' L	96+44, 104.0' L	24"	99 LF
55	5	95+58, 57.6' R	96+29, 55.9' R	30"	72 LF
55	5	96+62, 58.0' L	96+58, 36.3' R	30"	94 LF
55	5	96+90, 46.0' R	97+96, 35.2' R	30"	107 LF
55	5	98+01, 34.9' L	98+50, 34.3' L	18"	49 LF
55	6	100+70, 37.4' L	101+42, 37.8' L	24"	72 LF
55	6	100+75, 35.9' R	101+36, 36.6' R	18"	61 LF
55	6	103+09, 35.4' R	103+69, 37.9' R	24"	59 LF
55	6	98+50, 34.3' L	98+61, 34.1' L	18"	11 LF
55	7	107+29, 30.5' L	108+44, 28.8' L	18"	116 LF
55	7	110+74, 38.0' L	111+22, 37.9' L	18"	49 LF
55	7	107+44, 33.9' R	108+46, 33.3' R	24"	102 LF
55	7	109+55, 33.3' R	109+85, 32.8' R	30"	30 LF
55	8	113+03, 37.5' L	113+44, 38.3' L	18"	41 LF
55	8	113+47, 34.1' R	113+87, 33.2' R	24"	41 LF
55	8	117+80, 36.0' R	118+37, 35.3' R	24"	58 LF
55	9	120+04, 34.9' L	120+07, 32.4' R		67 LF
55	9	122+24, 38.7' L	122+85, 38.4' L	18"	61 LF
55	9	124+63, 68.2' L	125+13, 41.7' L	18"	57 LF
55	9	125+36, 39.0' L	125+76, 37.3' L	18"	40 LF
55	10	130+01, 34.0' L	130+01, 29.9' R	36"	64 LF
55	11	133+43, 36.3' R	133+91, 32.9' R	24"	52 LF
55	12	141+41, 35.8' L	142+12, 35.1' L	24"	70 LF
55	12	141+38, 35.5' R	142+17, 34.8' R	24"	79 LF
55	12	143+60, 36.7' R	144+00, 36.4' R	24"	40 LF
55	13	151+46, 36.7' R	151+76, 36.7' R	15"	30 LF
55	13	152+93, 37.6' R	153+29, 37.8' R	18"	37 LF
55	13	151+94, 34.8' L	152+32, 34.7' L	18"	39 LF
55	14	156+54, 37.6' R	156+91, 37.3' R	24"	36 LF
55	15	165+12, 38.2' L	165+48, 37.8' L	24"	36 LF
55	16	174+36, 65.2' L	174+36, 59.2' R	24"	124 LF

202 174 Removal of Pipe All Types and Sizes & 722 3297 Abandon Storm Sewer

Section	Sheet	Begin Station/Offset	End Station/Offset	Description	202 174 Quantity	722 3297 Quantity
55	1	68+13, 43.0' L	70+50, 47.0' L	20" FM		237 LF
55	2	71+35, 50.4' R	71+45, 30.8' R	15" ST		22 LF
55	2	73+71, 39.3' L	74+33, 38.4' L	20" FM	60 LF	
55	2	70+50, 47.0' L	73+71, 39.3' L	20" FM		320 LF
55	2	74+33, 38.4' L	77+50, 40.6' L	20" FM		318 LF
55	3	77+50, 40.6' L	84+50, 49.8' L	20" FM		700 LF
55	4	86+96, 30.7' L	86+99, 65.0' R	4" FM	96 LF	
55	4	84+50, 49.8' L	86+13, 49.7' L	20" FM		163 LF
55	4	86+13, 49.7' L	90+19, 49.8' L	24" FM		421 LF
55	4	90+19, 49.8' L	91+50, 52.8' L	20" FM		131 LF
55	5	92+65, 53.2' L	93+26, 52.0' L	20" FM	60 LF	
55	5	97+20, 36.2' L	97+21, 50.4' R	10" FM	85 LF	
55	5	91+50, 52.8' L	92+65, 53.2' L	20" FM		114 LF
55	5	93+26, 52.0' L	98+50, 36.2' L	20" FM		521 LF
55	5	92+96, 92.3' L	98+38, 114.7' L	10" SS		535 LF
55	5	98+22, 115.0' L	98+22, 82.7' L	8" SS		32 LF
55	5	98+38, 114.7' L	98+45, 36.2' L	4" FM		79 LF
55	5	98+22, 82.7' L	98+50, 82.2' L	8" SS		28 LF
55	6	102+96, 74.4' L	102+96, 36.0' L	1.5" FM	38 LF	
55	6	98+50, 36.2' L	105+50, 35.9' L	18" FM		700 LF
55	6	98+50, 82.2' L	105+50, 69.8' L	8" SS		700 LF
55	6	100+33, 23.3' L	100+33, 2.3' L	12" WM	21 LF	
55	7	108+10, 35.5' R	108+30, 35.8' R	12" WM	20 LF	
55	7	107+19, 42.1' R	108+46, 33.3' R	36" ST	128 LF	
55	7	105+50, 69.8' L	105+75, 69.4' L	8" SS		23 LF
55	7	105+50, 35.9' L	112+50, 35.7' L	18" FM		700 LF
55	8	112+50, 35.6' L	119+50, 35.4' L	18" FM		700 LF
55	9	123+51, 55.0' L	123+52, 25.0' R	6" SS	80 LF	
55	9	123+77, 35.2' L	123+77, 59.4' R	18" FM	95 LF	
55	9	125+45, 42.1' R	125+70, 42.2' R	42" ST	25 LF	
55	9	119+50, 35.4' L	123+77, 35.2' L	18" FM		425 LF
55	9	123+30, 67.5' L	123+30, 35.2' L	6" FM		32 LF
55	9	123+51, 55.0' L	126+50, 56.0' L	10"SS		301 LF
55	9	123+30, 67.6' L	125+18, 67.5' L	6" FM		188 LF
55	9	124+12, 37.0' R	124+60, 36.7' R	12" WM	48 LF	
55	9	125+18, 67.5' L	125+18, 94.2' L	6" FM		27 LF
55	9	124+50, 63.2' R	125+45, 42.1' R	42" ST		99 LF
55	9	125+70, 42.2' R	126+50, 42.7' R	42" ST		78 LF
55	9	125+14, 94.2' L	125+46, 94.4' L	6" FM		28 LF
55	9	125+46, 94.4' L	125+44, 55.7' L	12" SS		39 LF
55	10	131+94, 0.0' R	131+94, 25.0' R	6" FM	25 LF	
55	10	126+50, 56.0' L	133+50, 54.4' L	10" SS		700 LF
55	10	126+50, 42.7' R	127+42, 43.1' R	42" ST		92 LF
55	10	127+69, 42.5' R	129+39, 40.7' R	36" ST		170 LF
55	10	131+20, 43.0' R	133+50, 38.3' R	24" ST		231 LF
55	10	127+42, 37.1' R	127+42, 38.8' R	15" ST		2 LF
55	10	127+42, 43.1' R	127+69, 42.5' R	36" ST	27 LF	
55	10	128+63, 53.7' R	128+71, 43.2' R	15" ST		14 LF
55	10	129+39, 40.7' R	130+02, 41.5' R	36" ST	64 LF	
55	10	130+02, 41.5' R	131+02, 42.8' R	36" ST		100 LF
55	10	131+02, 42.8' R	131+20, 43.0' R	36" ST	18 LF	
55	11	133+50, 54.4' L	140+50, 54.5' L	10" SS		700 LF
55	11	133+50, 38.3' R	140+50, 36.3' R	24" ST		700 LF
55	12	140+50, 54.5' L	147+50, 54.6' L	10" SS		700 LF
55	12	140+50, 36.3' R	141+34, 36.4' R	24" ST		84 LF
55	12	141+34, 36.4' R	142+64, 34.1' R	18" ST		130 LF
55	12	142+64, 34.1' R	142+84, 36.1' R	18" ST	20 LF	
55	12	142+84, 36.1' R	145+90, 35.4' R	18" ST		306 LF
55	12	145+90, 35.4' R	146+10, 35.3' R	18" ST	20 LF	
55	12	146+10, 35.3' R	147+50, 35.3' R	18" ST		140 LF
55	13	147+50, 54.6' L	149+49, 58.4' L	10" SS		199 LF
55	13	147+50, 34.5' R	150+63, 34.4' R	18" ST		313 LF
55	16	174+70, 84.9' L	175+70,84.3' L	36" ST		100 LF
55	21	3+49, 23.1' R	6+50, 22.9' R	10" FM		301 LF
55	22	6+50, 22.9' R	13+50, 22.8' R	10" FM		700 LF
55	23	13+50, 22.8' R	15+13, 22.8' R	10" FM		163 LF
55	24	0+10, 5.0' L	1+89, 17.9' L	8" FM		184 LF
55	24	0+53, 0.0'	2+00, 0.0'	10" SS		147 LF
55	24	2+00, 0.0'	2+00, 27.3' L	10" SS		27 LF
55	25	0+34, 27.4' R	1+25, 38.9' R	24" ST	91 LF	
55	25	5+01, 15.1' R	5+01, 5.6' R	24" ST	10 LF	
55	25	4+25, 0.0' R	4+46, 1.0'R	8" SS		21 LF
55	25	4+46, 1.0' R	4+46, 126.6' R	FM		126 LF
55	26	2+99, 10.1' L	3+39, 9.9' L	16" WM	40 LF	

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12TH AVENUE NORTH RECONSTRUCTION

REMOVAL QUANTITIES

STA 68+00 - 175+32

REMOVAL QUANTITIES - STA 68+00 TO 175+32

722 3291 Abandon Sanitary Sewer Manhole & 722 3295 Abandon Storm Sewer Manhole

Section	Sheet	Station/Offset	722 3291 Quantity	722 3295 Quantity
55	4	86+59, 30.6' L	1 EA	
55	5	95+21, 92.0' L	1 EA	
55	5	98+22, 82.7' L	1 EA	
55	6	101+52, 76.9' L	1 EA	
55	9	123+51, 55.0' L	1 EA	
55	9	125+44, 55.7' L	1 EA	
55	9	125+01, 41.8' R		1 EA
55	10	127+85, 56.4' L	1 EA	
55	10	131+93, 55.7' L	1 EA	
55	10	127+42, 43.1' R		1 EA
55	10	128+74, 39.9' R		1 EA
55	10	131+50, 43.0' R		1 EA
55	11	134+98, 53.1' L	1 EA	
55	11	138+63, 55.1' L	1 EA	
55	11	134+50, 36.2' R		1 EA
55	11	137+42, 35.9' R		1 EA
55	12	142+23, 53.9' L	1 EA	
55	12	145+86, 51.6' L	1 EA	
55	12	145+63, 35.6' R		1 EA
55	13	149+26, 33.4' R		1 EA
55	13	150+63, 34.4' R		1 EA

202 210 Removal of Manholes, 202 235 Removal of Catch Basin, 724 270 Remove Gate Valve & Box, 724 6013 Abandon Valve Box & 990 450 Abandon Well

Section	Sheet	Station/Offset	202 210 Quantity	202 235 Quantity	724 270 Quantity	724 6013 Quantity	990 450 Quantity
55	2	76+78, 59.8' R		1 EA			
55	4	86+97, 29.3' L			1 EA		
55	4	86+49, 30.6' L				1 EA	
55	5	97+12, 36.6' L				1EA	
55	5	98+11, 114.2' L				1 EA	
55	5	98+31, 114.6' L				1 EA	
55	5	98+22, 98.8' L				1 EA	
55	5	98+45, 38.9' L				1 EA	
55	5	98+22, 115.0' L					1 EA
55	5	98+38, 114.7' L					1 EA
55	7	107+18, 42.1' R	1 EA				
55	7	108+30, 34.2' R	1 EA				
55	9	123+79, 38.2' R			1 EA		
55	9	123+28, 39.5' L				1 EA	
55	9	125+32, 94.2' L					1 EA
55	9	125+39, 94.3' L				1 EA	
55	9	125+46, 94.4' L					1 EA
55	24	0+53, 0.0'	1 EA				
55	24	1+91, 20.6' L					1 EA
55	24	2+00, 27.3' L					1 EA
55	24	2+00, 10.1' L				1 EA	
55	25	4+36, 0.3' R				1 EA	
55	25	4+46, 1.0' R					1 EA
55	25	5+01, 0.2' R					1 EA

202 112 Removal of Concrete

Section	Sheet	Start Station/Offset	End Station/Offset	202 212 Quantity
55	5	98+15, 13.6' L	98+43, 12.4' L	218 SY
55	9	125+30, 16.1' L	125+78, 15.9' L	202 SY
55	24	1+90	2+14	60 SY
55	25	4+30, 3.1' R	4+50, 3.0' R	26 SY
55	25	4+90, 0.0'	4+95, 0.2' R	3 SY

202 312 Remove Existing Fence, 754 9003 Salvage Sign-Type D

Section	Sheet	Station/Offset	202 312 Quantity	754 9003 Quantity
55	5	98+05, 84.8' L - 98+42, 84.3' L	163 LF	
55	5	98+25, 84.4' L		1 EA
55	9	125+28, 81.2' L - 125+66, 79.5' L	106 LF	
55	9	125+38, 80.0' L		1 EA
55	24	1+88, 37.0' L		1 EA
55	25	4+43, 4.7' L		1 EA

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12TH AVENUE NORTH RECONSTRUCTION

REMOVAL QUANTITIES

STA 68+00 - 175+32

FILE LOCATION: R:\Civil 3D Projects\16843\DRAWINGS\DESIGN\16843-COVER-NOTES.dwg

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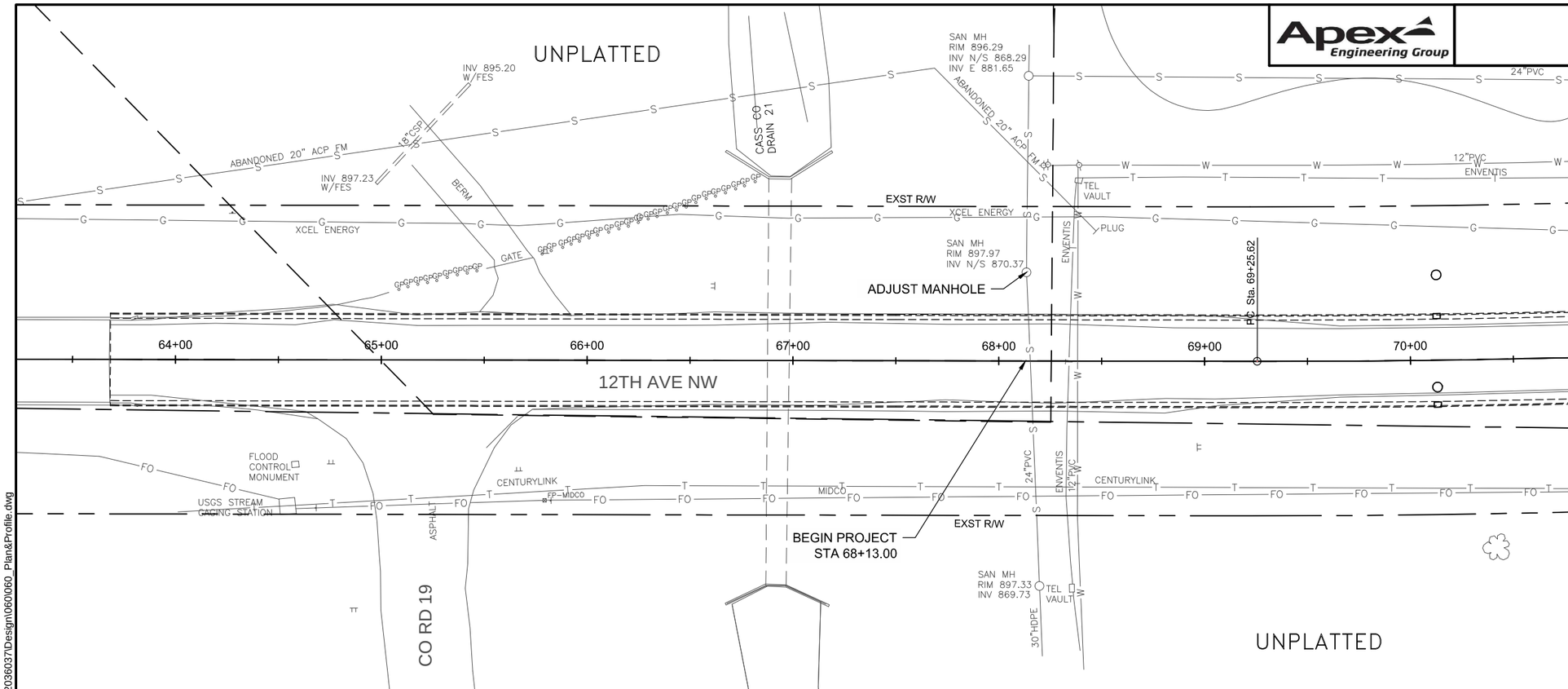
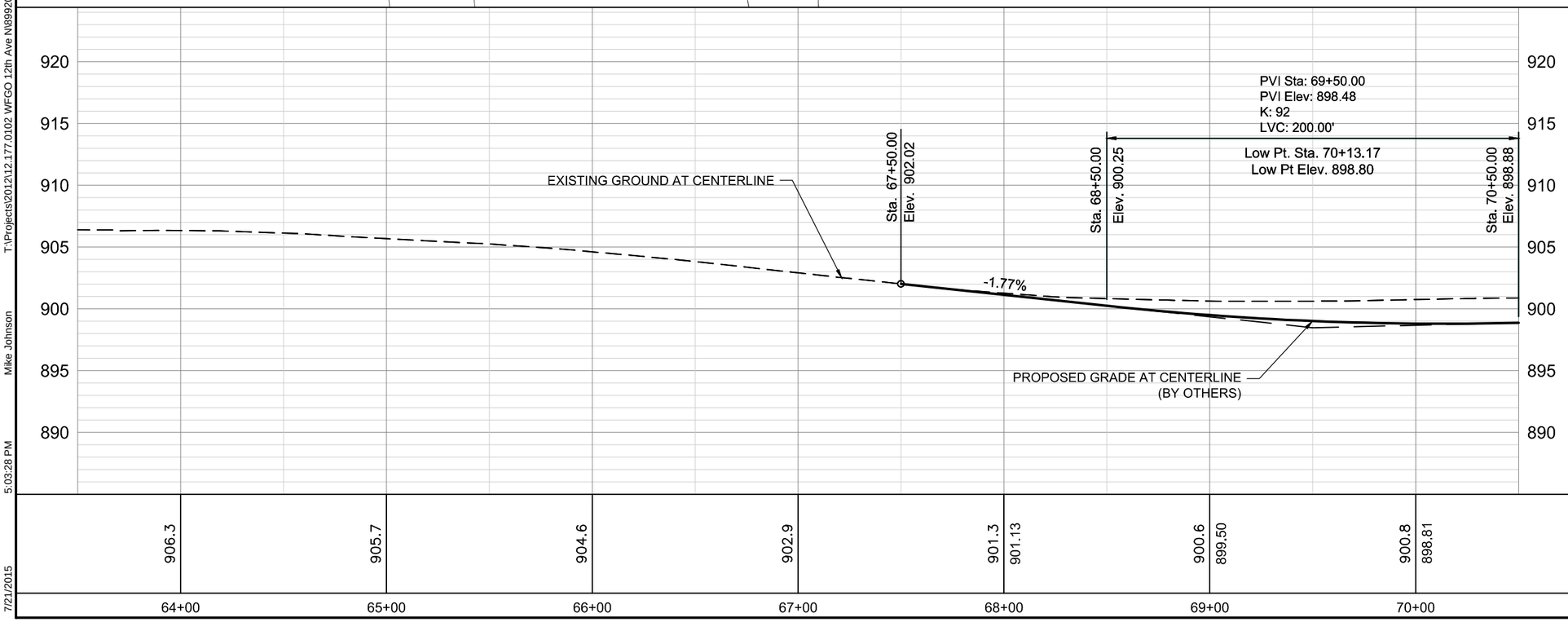
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	1

722 6200 ADJUST MANHOLE
Sta 68+13 LT 1 EA





Legend

- Salvaged Base Course
- Commercial Grade Hot Mix Asphalt
- Pigmented Imprinted Concrete
- Sidewalk Concrete
- Concrete Median Nose Paving
- Driveway Concrete 8IN

N

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12TH AVENUE NORTH RECONSTRUCTION

PLAN & PROFILE

STA 63+50 - 70+50

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Mike Johnson
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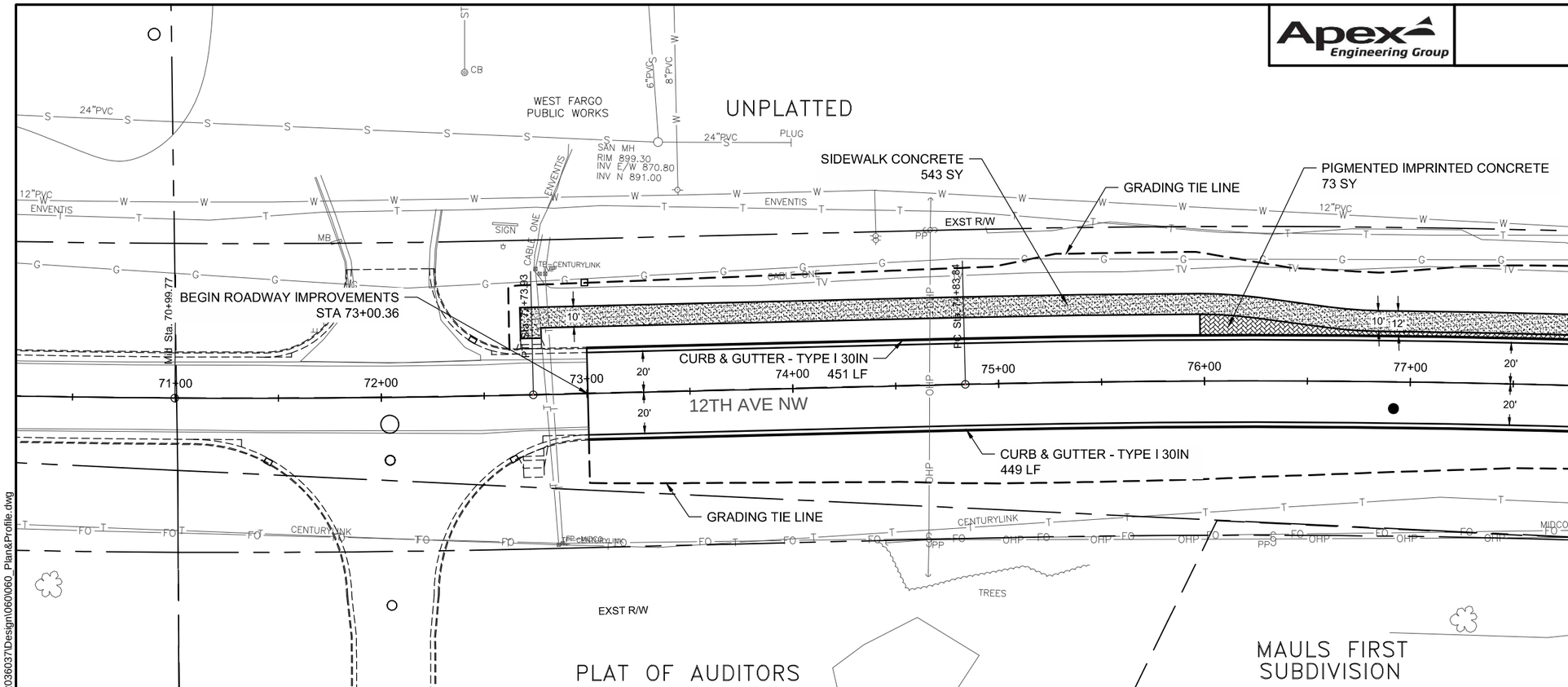
7/21/2015

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	2



302 0100 SALVAGED BASE COURSE

Sta 73+00 to Sta 77+50	1468 TON
Sta 72+36 to Sta 77+50 LT - SIDEWALK	114 TON
Sta 76+00 to Sta 77+50 LT - IMPRINTED CONCRETE	16 TON

550 0312 10.5IN NON REINF CONCRETE PVMT CL AE - DOWELED

Sta 73+00 to Sta 77+50	1999 SY

748 0190 CURB & GUTTER - TYPE I 30IN

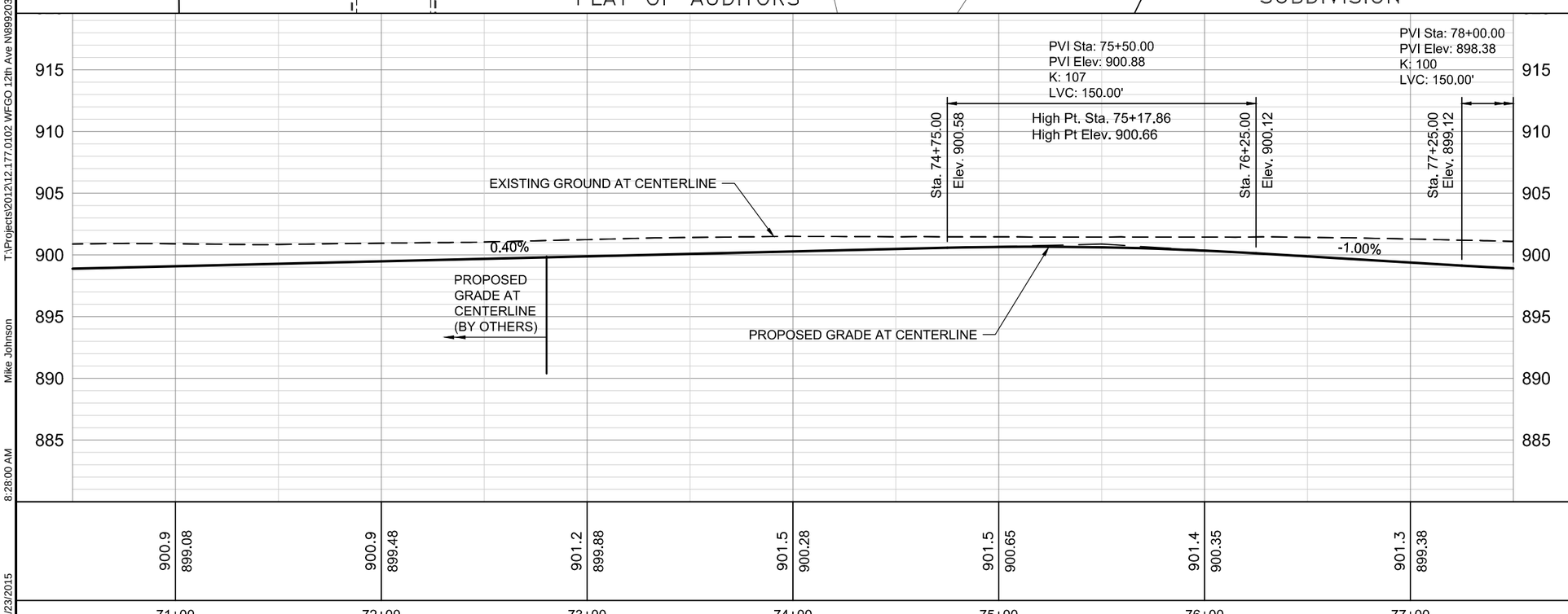
Sta 73+00 to Sta 77+50 LT	451 LF
Sta 73+00 to Sta 77+50 RT	449 LF

750 0030 PIGMENTED IMPRINTED CONCRETE

Sta 76+00 to Sta 77+50 LT	73 SY

750 0100 SIDEWALK CONCRETE

Sta 72+68 to Sta 77+50 LT	543 SY



Legend

- Salvaged Base Course
- Commercial Grade Hot Mix Asphalt
- Pigmented Imprinted Concrete
- Sidewalk Concrete
- Concrete Median Nose Paving
- Driveway Concrete 8IN

N

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12TH AVENUE NORTH RECONSTRUCTION

PLAN & PROFILE

STA 70+50 - 77+50

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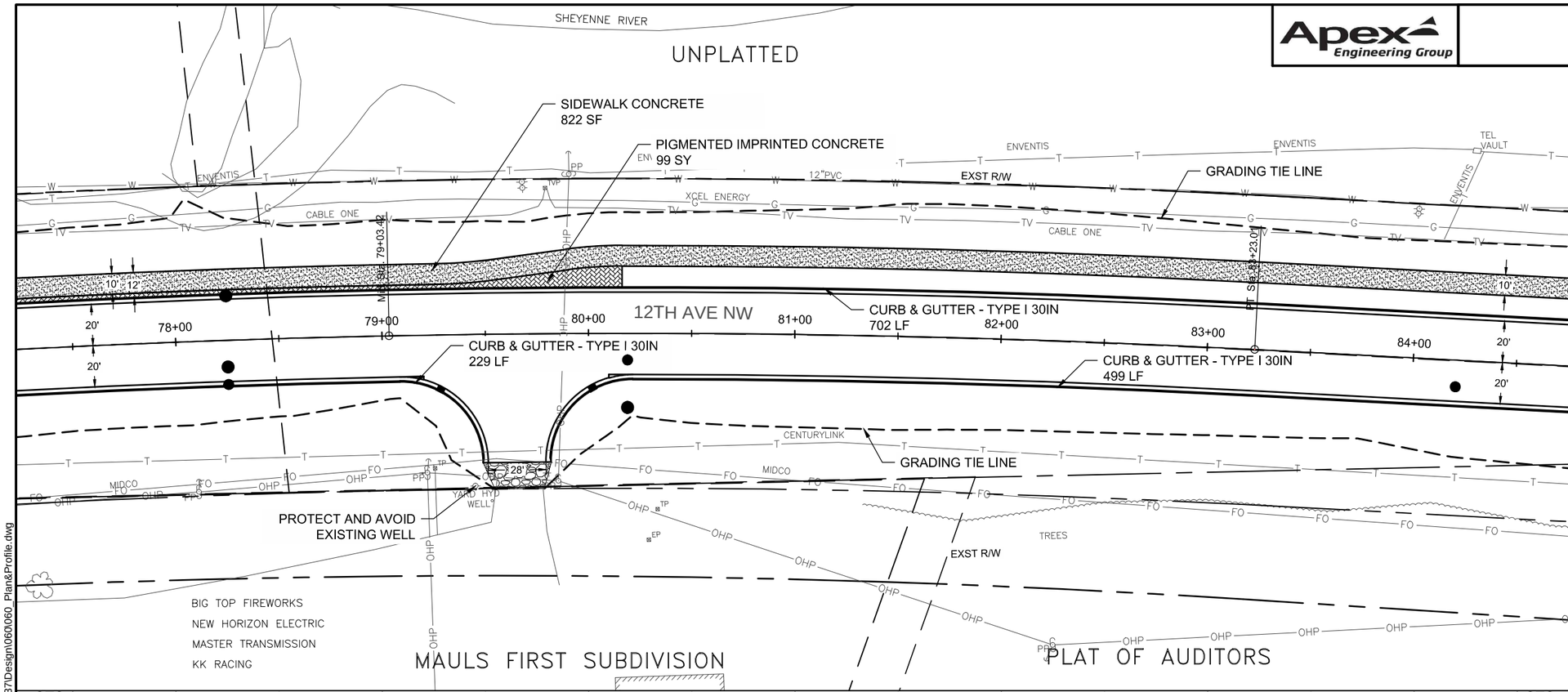
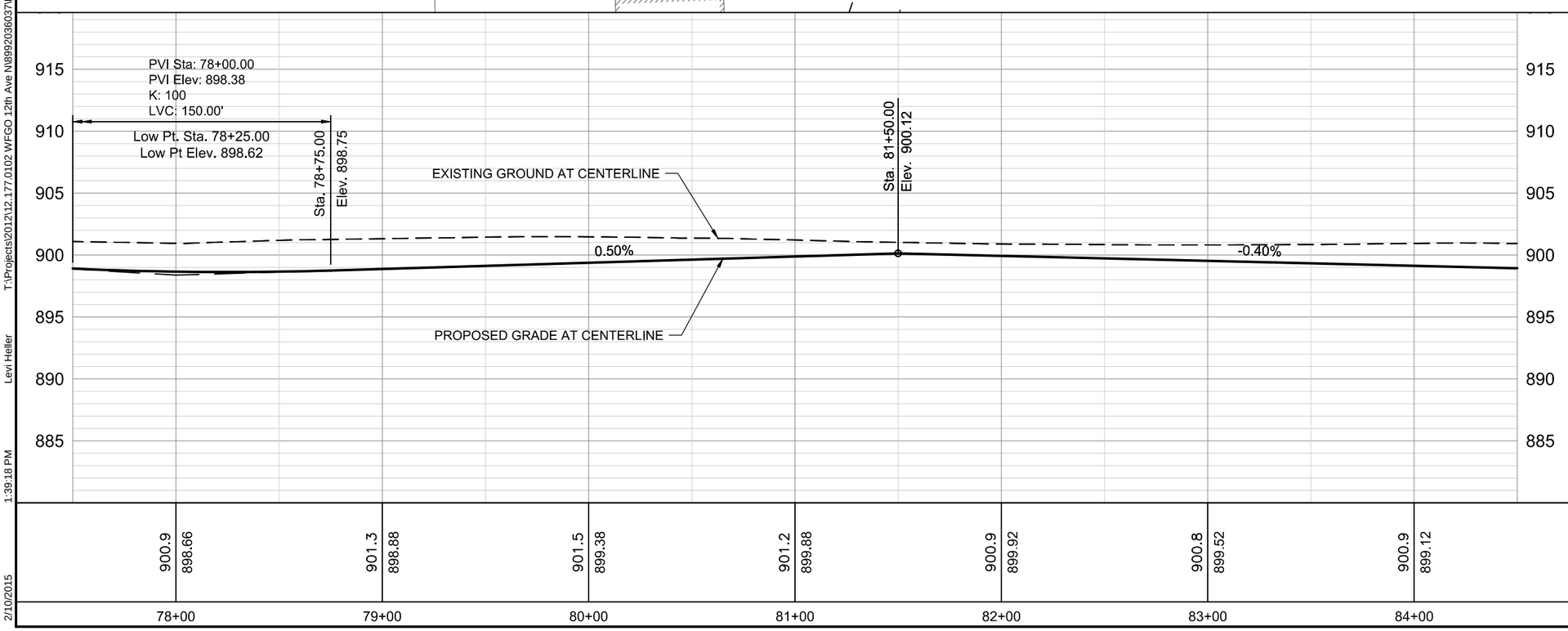
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	3

Apex Engineering Group





302 0100 SALVAGED BASE COURSE

Sta 77+50 to Sta 84+50	2446 TON
Sta 77+50 to Sta 84+50 LT - SIDEWALK	172 TON
Sta 77+50 to Sta 80+16 LT - IMPRINTED CONCRETE	21 TON

550 0312 10.5IN NON REINF CONCRETE PVMT CL AE - DOWELED

Sta 77+50 to Sta 84+50	3356 SY

748 0190 CURB & GUTTER - TYPE I 30IN

Sta 77+50 to Sta 84+50 LT	702 LF
Sta 77+50 to Sta 79+50 RT	229 LF
Sta 79+80 too Sta 84+50 RT	499 LF

750 0030 PIGMENTED IMPRINTED CONCRETE

Sta 77+50 to Sta 80+16 LT	99 SY

750 0100 SIDEWALK CONCRETE

Sta 77+50 to Sta 84+50 LT	822 SY

Legend

- Salvaged Base Course
- Commercial Grade Hot Mix Asphalt
- Pigmented Imprinted Concrete
- Sidewalk Concrete
- Concrete Median Nose Paving
- Driveway Concrete 8IN

N

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12TH AVENUE NORTH RECONSTRUCTION

PLAN & PROFILE

STA 77+50 - 84+50

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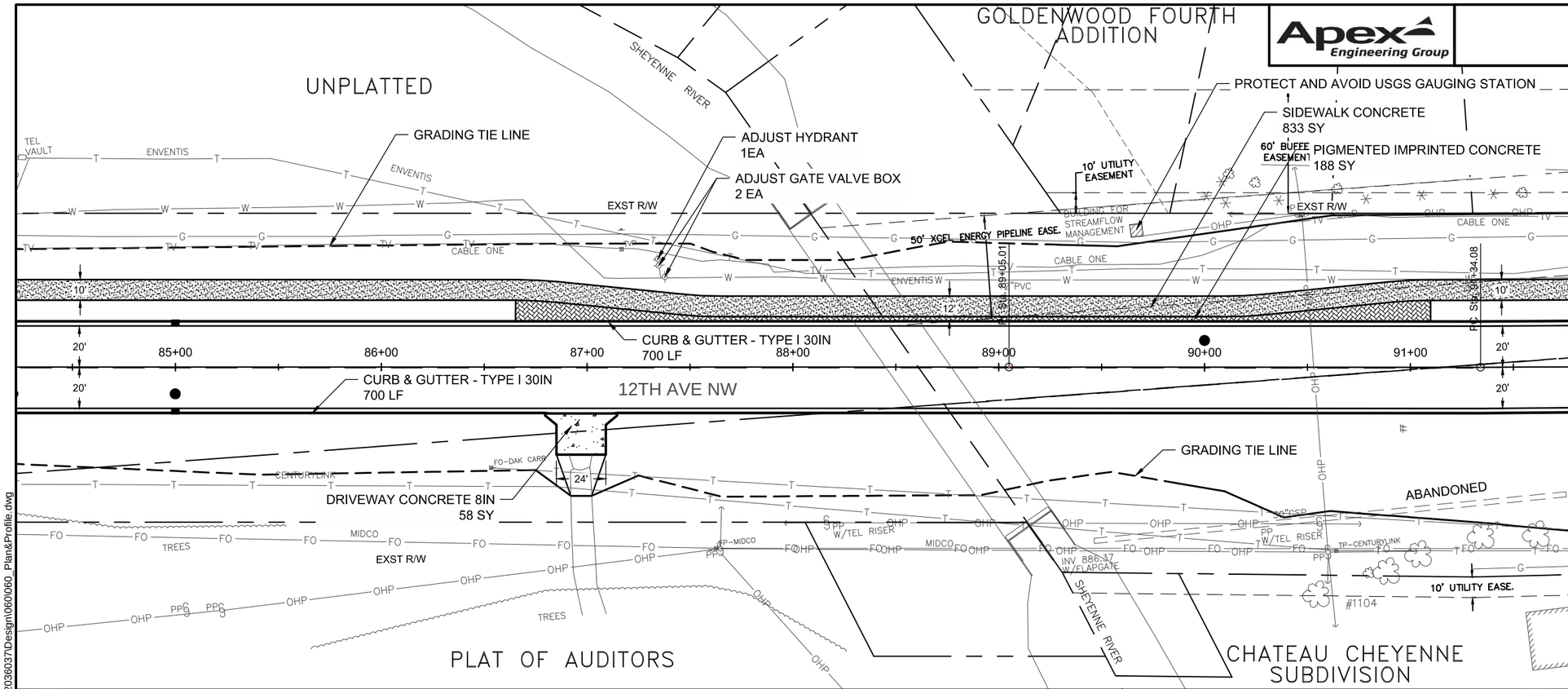
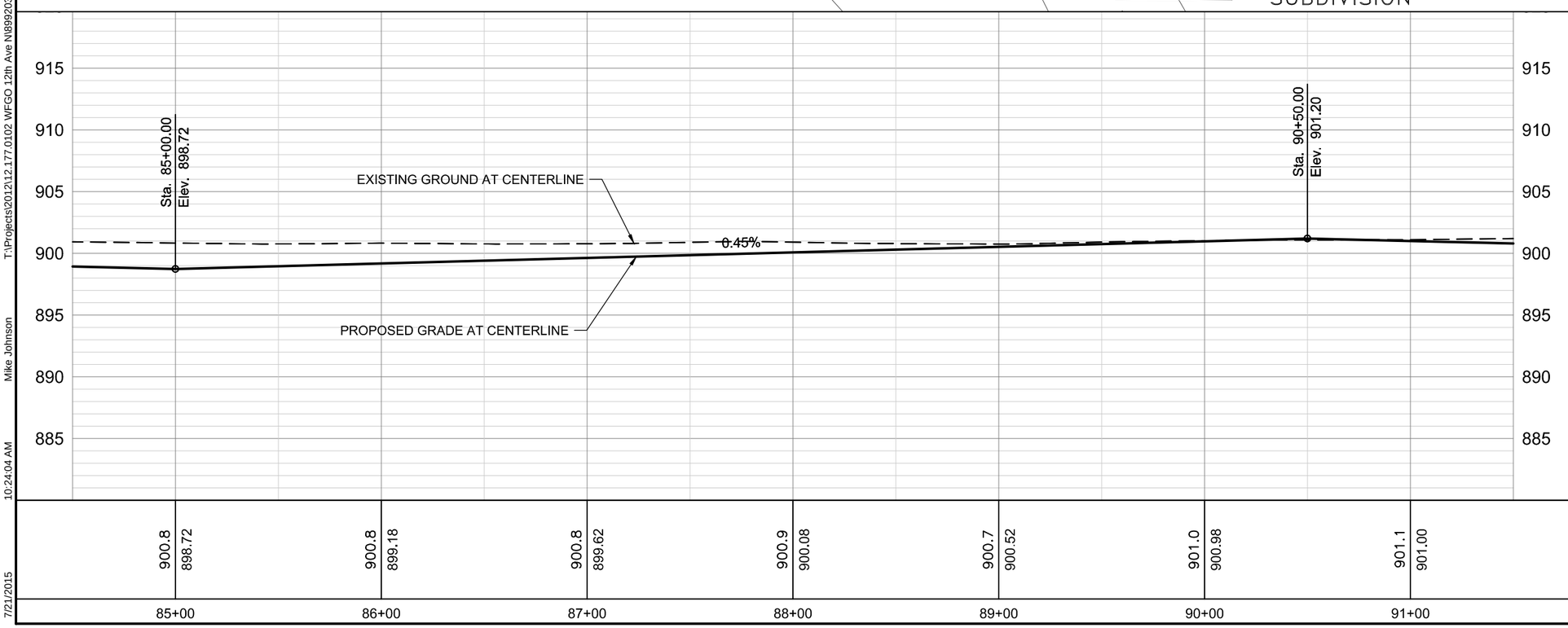
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	4





302 0100 SALVAGED BASE COURSE

Sta 84+50 to Sta 91+50	2285 TON
Sta 84+50 to Sta 91+50 LT - SIDEWALK	174 TON
Sta 86+75 to Sta 91+10 LT - IMPRINTED CONCRETE	40 TON
Sta 86+95 RT - DRIVEWAY	12 TON

550 0312 10.5IN NON REINF CONCRETE PVMT CL AE - DOWELED

Sta 84+50 to Sta 91+50	3112 SY

722 6140 ADJUST GATE VALVE BOX

Sta 87+35 LT	2 EA

724 0427 ADJUST HYDRANT

STA 87+35 LT	1 EA

748 0190 CURB & GUTTER - TYPE I 30IN

Sta 84+50 to Sta 91+50 LT	700 LF
Sta 84+50 to Sta 91+50 RT	700 LF

750 0030 PIGMENTED IMPRINTED CONCRETE

Sta 86+75 to Sta 91+10 LT	188 SY

750 0100 SIDEWALK CONCRETE

Sta 84+50 to Sta 91+50 LT	833 SY

750 1020 DRIVEWAY CONCRETE 8IN

Sta 86+95 RT	58 SY

Legend

- Salvaged Base Course
- Commercial Grade Hot Mix Asphalt
- Pigmented Imprinted Concrete
- Sidewalk Concrete
- Concrete Median Nose Paving
- Driveway Concrete 8IN

N

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12TH AVENUE NORTH RECONSTRUCTION

PLAN & PROFILE

STA 84+50 - 91+50

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Mike Johnson
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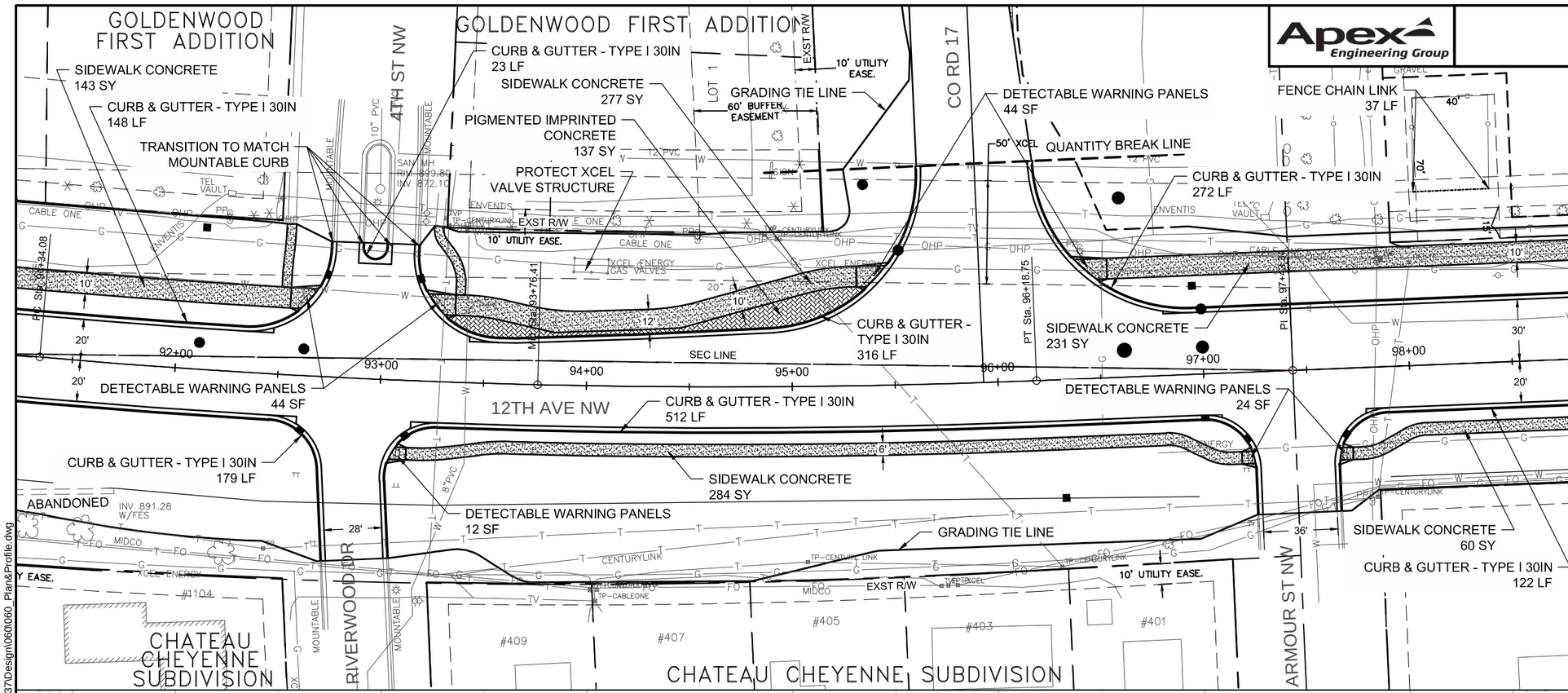
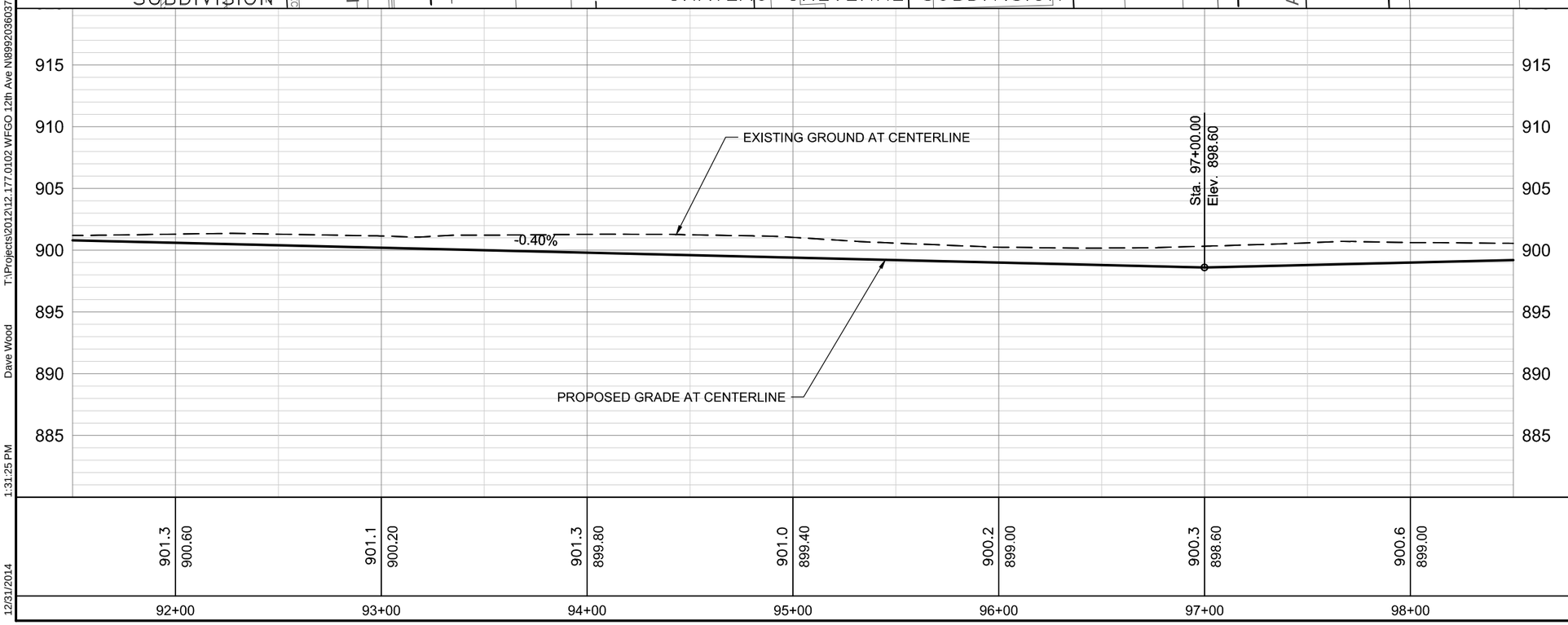
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	5





302 0100 SALVAGED BASE COURSE	
Sta 91+50 to Sta 98+50	3513 TON
Sta 91+50 to Sta 92+70 LT - SIDEWALK	30 TON
Sta 93+05 to Sta 97+23 RT - SIDEWALK	60 TON
Sta 93+22 to Sta 95+48 LT - SIDEWALK	58 TON
Sta 93+32 to Sta 95+48 LT - IMPRINTED CONCRETE	29 TON
Sta 96+38 to Sta 98+50 LT - SIDEWALK	48 TON
Sta 97+65 to Sta 98+50 RT - SIDEWALK	13 TON
550 0312 10.5IN NON REINF CONCRETE PVMT CL AE - DOWELED	
Sta 91+50 to Sta 98+50	4997 SY
748 0190 CURB & GUTTER - TYPE I 30IN	
Sta 91+50 to Sta 92+75 LT	148 LF
Sta 91+50 to Sta 92+75 RT	179 LF
Sta 92+90 to Sta 93+00 LT	23 LF
Sta 93+05 to Sta 97+25 RT	512 LF
Sta 93+15 to Sta 95+65 LT	316 LF
Sta 96+20 to Sta 98+50 LT	272 LF
Sta 97+65 to Sta 98+50 RT	122 LF
750 0030 PIGMENTED IMPRINTED CONCRETE	
Sta 93+32 to Sta 95+35 LT	137 SY
750 0100 SIDEWALK CONCRETE	
Sta 91+50 to Sta 92+70 LT	143 SY
Sta 93+05 to Sta 97+23 RT	284 SY
Sta 93+22 to Sta 95+48 LT	277 SY
Sta 96+38 to Sta 98+50 LT	231 SY
Sta 97+65 to Sta 98+50 RT	60 SY
750 2115 DETECTABLE WARNING PANELS	
Sta 92+62 LT	22 SF
Sta 93+10 RT	12 SF
Sta 93+27 LT	22 SF
Sta 95+40 LT	22 SF
Sta 96+45 LT	22 SF
Sta 97+20 RT	12 SF
Sta 97+67 RT	12 SF
752 0600 FENCE CHAIN LINK	
Sta 98+05 to Sta 98+42 LT	37 LF

Legend

- Salvaged Base Course
- Commercial Grade Hot Mix Asphalt
- Pigmented Imprinted Concrete
- Sidewalk Concrete
- Concrete Median Nose Paving
- Driveway Concrete 8IN

N

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12TH AVENUE NORTH RECONSTRUCTION

PLAN & PROFILE

STA 91+50 - 98+50

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Dave Wood
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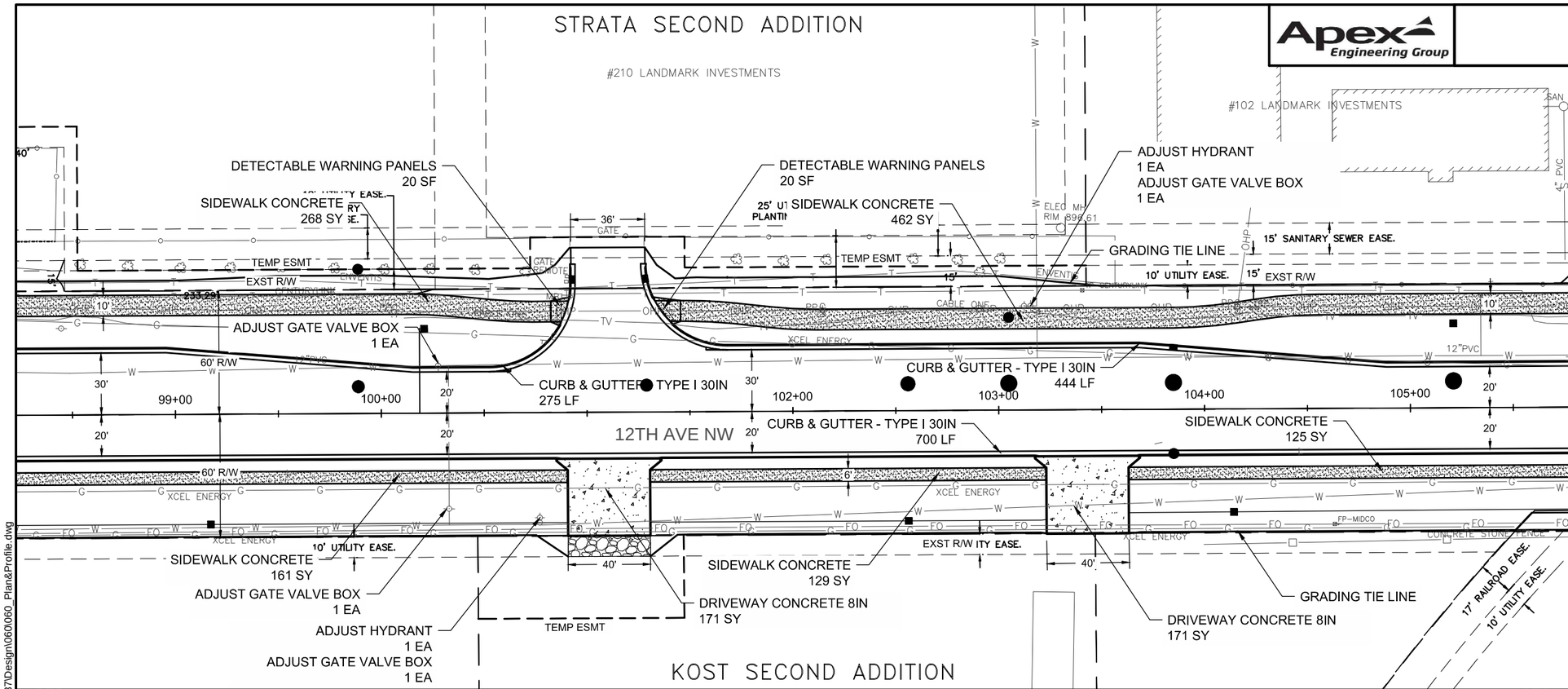
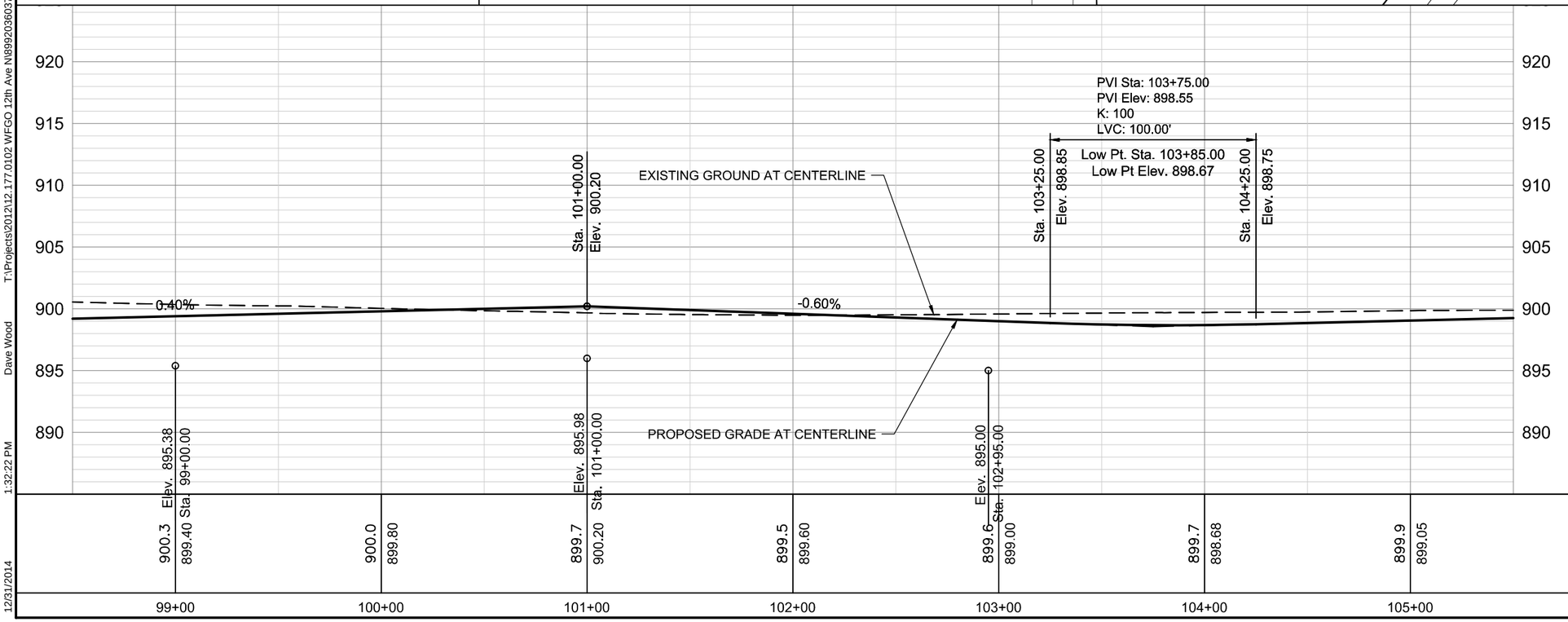
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	6





302 0100 SALVAGED BASE COURSE

Sta 98+50 to Sta 105+50	2763 TON
Sta 98+50 to Sta 100+92 LT - SIDEWALK	56 TON
Sta 98+50 to Sta 100+90 RT - SIDEWALK	34 TON
Sta 101+10 RT- DRIVEWAY	36 TON
Sta 101+30 to Sta 103+23 RT - SIDEWALK	27 TON
Sta 101+32 to Sta 105+50 LT - SIDEWALK	97 TON
Sta 103+45 RT - DRIVEWAY	36 TON
Sta 103+63 to Sta 105+50 RT - SIDEWALK	26 TON

550 0312 10.5IN NON REINF CONCRETE PVMT CL AE - DOWELED

Sta 98+50 to Sta 105+50	3865 SY

722 6140 ADJUST GATE VALVE BOX

Sta 100+28 LT	1 EA
Sta 100+33 RT	1 EA
Sta 100+80 RT	1 EA
Sta 103+18 LT	1 EA

724 0427 ADJUST HYDRANT

Sta 100+80 RT	1 EA
Sta 103+18 LT	1 EA

748 0190 CURB & GUTTER - TYPE I 30IN

Sta 98+50 to Sta 100+90 LT	275 LF
Sta 98+50 to Sta 105+50 RT	700 LF
Sta 101+32 to Sta 105+50 LT	444 LF

750 0100 SIDEWALK CONCRETE

Sta 98+50 to Sta 100+92 LT	268 SY
Sta 98+50 to Sta 100+90 RT	161 SY
Sta 101+30 to Sta 103+23 RT	129 SY
Sta 101+32 to Sta 105+50 LT	462 SY
Sta 103+63 to Sta 105+50 RT	125 SY

750 1020 DRIVEWAY CONCRETE 8IN

Sta 101+10 RT	171 SY
Sta 103+45 RT	171 SY

750 2115 DETECTABLE WARNING PANELS

Sta 100+86 LT	20 SF
Sta 101+38 RT	20 SF

Legend

- Salvaged Base Course
- Commercial Grade Hot Mix Asphalt
- Pigmented Imprinted Concrete
- Sidewalk Concrete
- Concrete Median Nose Paving
- Driveway Concrete 8IN

N

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12TH AVENUE NORTH RECONSTRUCTION

PLAN & PROFILE

STA 98+50 - 105+50

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Dave Wood
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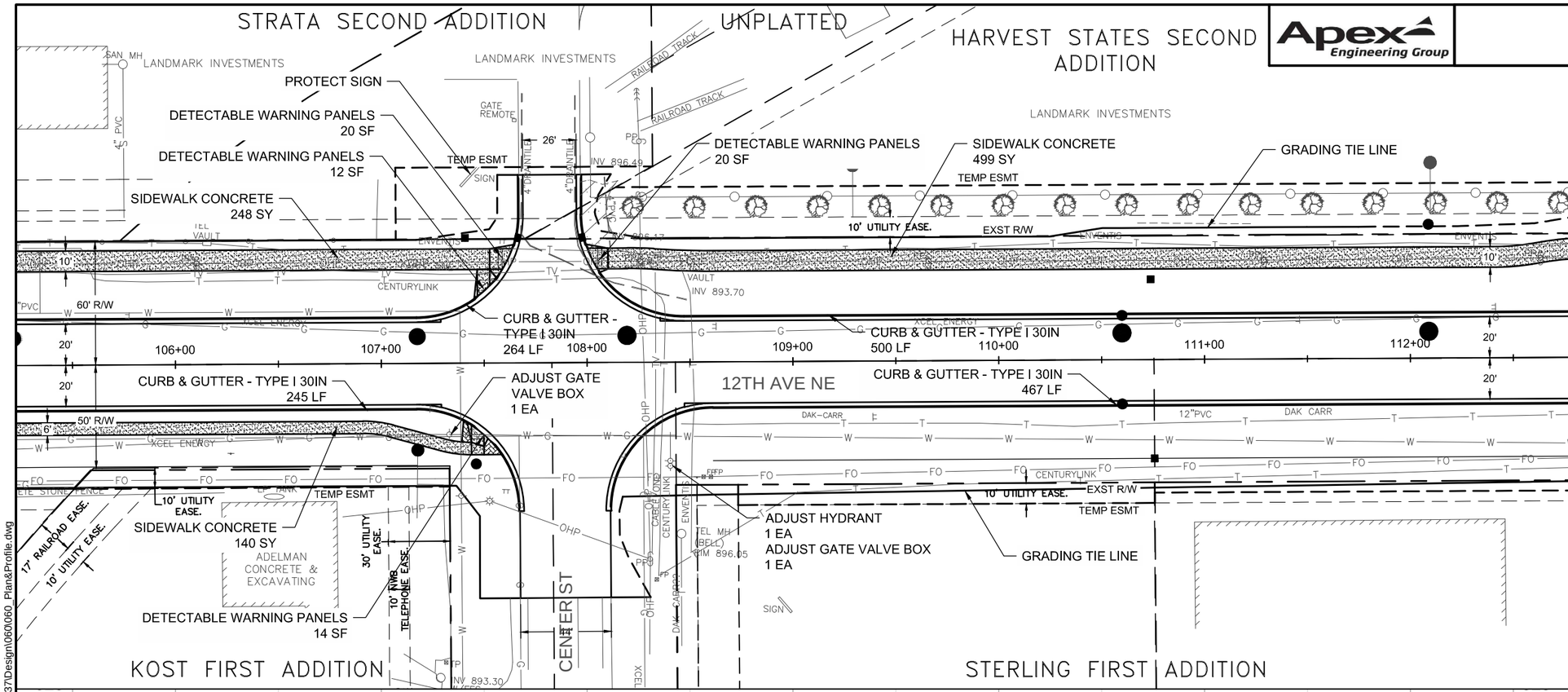
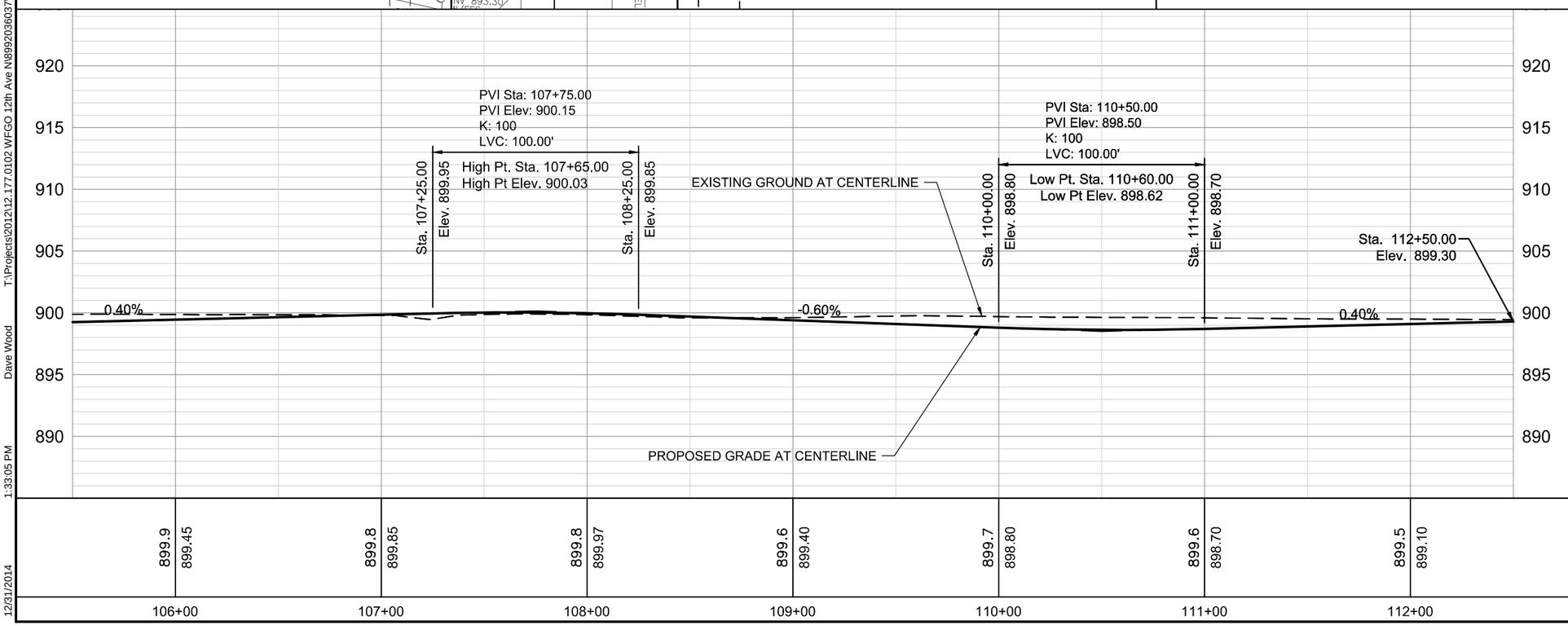
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	7

Apex Engineering Group





302 0100 SALVAGED BASE COURSE

Sta 105+50 to Sta 112+50	2877 TON
Sta 105+50 to Sta 107+60 LT - SIDEWALK	52 TON
Sta 105+50 to Sta 107+54 RT - SIDEWALK	30 TON
Sta 108+00 to Sta 112+50 LT- SIDEWALK	104 TON

550 0312 10.5IN NON REINF CONCRETE PVMT CL AE - DOWELED

Sta 105+50 to Sta 112+50	4016 SY

722 0427 ADJUST GATE VALVE BOX

Sta 107+35 RT	1 EA
Sta 108+38 RT	1 EA

724 0427 ADJUST HYDRANT

Sta 108+38 RT	1 EA

748 0190 CURB & GUTTER - TYPE I 30IN

Sta 105+50 to Sta 107+65 LT	264 LF
Sta 105+50 to Sta 107+60 RT	245 LF
Sta 108+00 to Sta 112+50 LT	500 LF
Sta 108+10 to Sta 112+50 RT	467 LF

750 0100 SIDEWALK CONCRETE

Sta 105+50 to Sta 107+60 LT	248 SY
Sta 105+50 to Sta 107+54 RT	140 SY
Sta 108+00 to Sta 112+50 LT	499 SY

750 2115 DETECTABLE WARNING PANELS

Sta 107+50 LT	12 SF
Sta 107+50 RT	14 SF
Sta 107+58 LT	20 SF
Sta 108+06 LT	20 SF

Legend

- Salvaged Base Course
- Commercial Grade Hot Mix Asphalt
- Pigmented Imprinted Concrete
- Sidewalk Concrete
- Concrete Median Nose Paving
- Driveway Concrete 8IN

N

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12TH AVENUE NORTH RECONSTRUCTION

PLAN & PROFILE

STA 105+50 - 112+50

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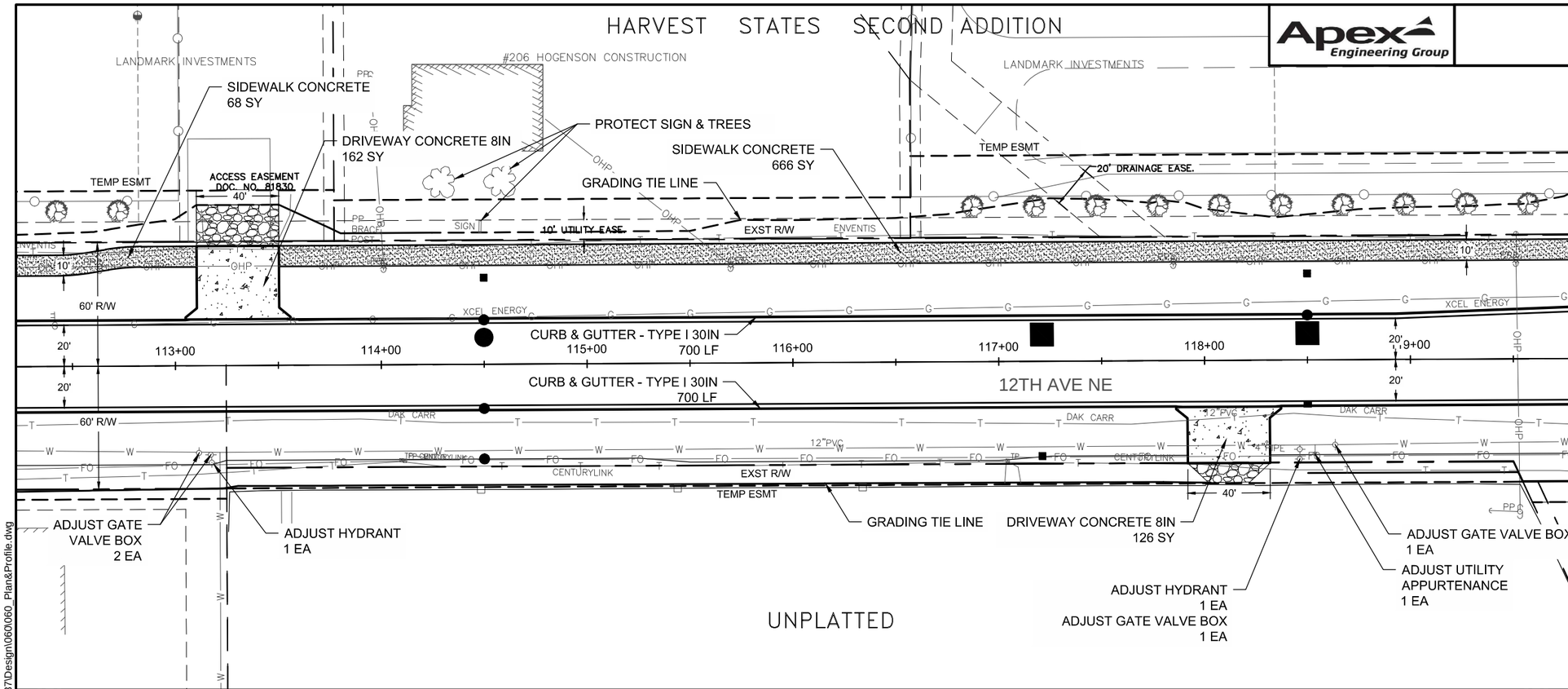
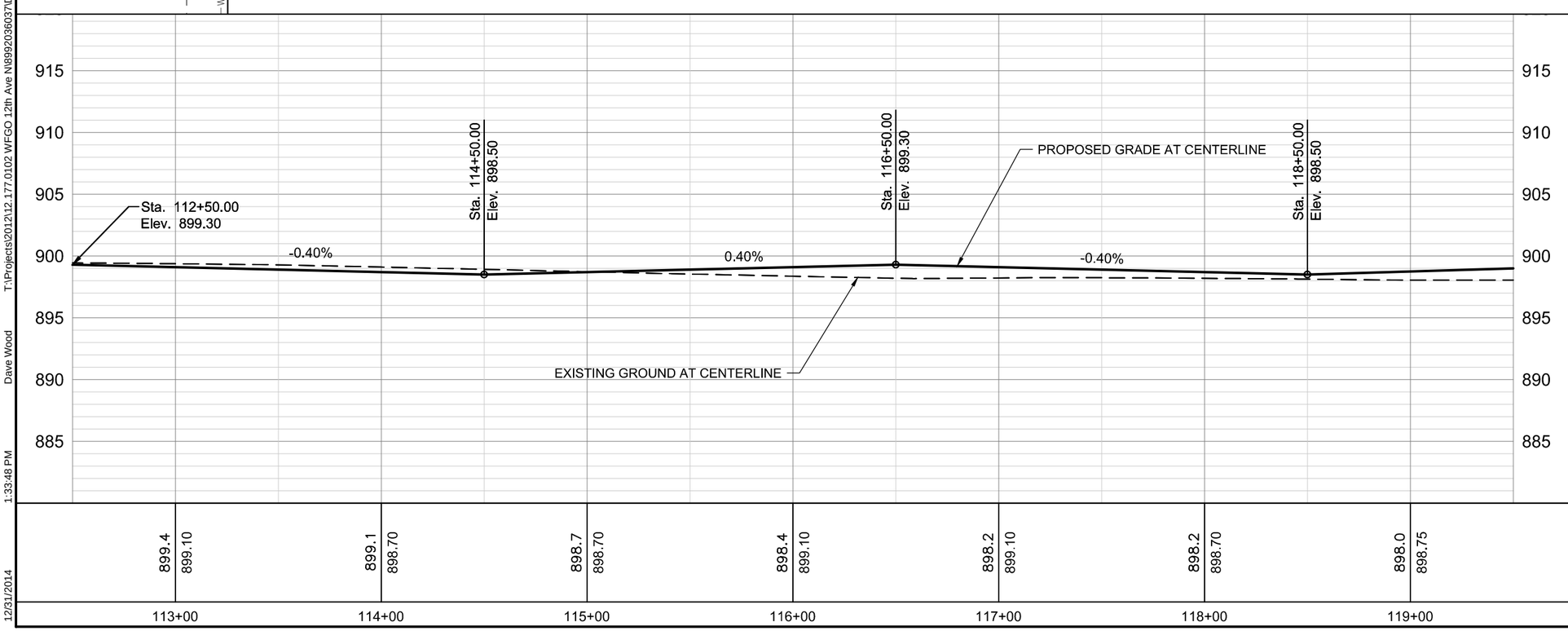
12/31/2014

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	8





302 0100 SALVAGED BASE COURSE

Sta 112+50 to Sta 119+50	2289 TON
Sta 112+50 to Sta 113+10 LT - SIDEWALK	15 TON
Sta 113+30 LT - DRIVEWAY	34 TON
Sta 113+50 to Sta 119+50 LT - SIDEWALK	139 TON
Sta 118+10 RT - DRIVEWAY	27 TON

550 0312 10.5IN NON REINF CONCRETE PVMT CL AE - DOWELED

Sta 112+50 to Sta 119+50	3118 SY

722 6140 ADJUST GATE VALVE BOX

Sta 113+17 LT	2 EA
Sta 118+45 RT	1 EA
Sta 118+65 RT	1 EA

722 6240 ADJUST UTILITY APPURTENANCE

Sta 118+54 RT	1 EA

724 0427 ADJUST HYDRANT

Sta 113+17 RT	1 EA
Sta 118+45 RT	1 EA

748 0190 CURB & GUTTER - TYPE I 30IN

Sta 112+50 to Sta 119+50 LT	700 LF
Sta 112+50 to Sta 119+50 RT	700 LF

750 0100 SIDEWALK CONCRETE

Sta 112+50 to Sta 113+10 LT	68 SY
Sta 113+50 to Sta 119+50 LT	666 SY

750 1020 DRIVEWAY CONCRETE 8IN

Sta 113+30 LT	162 SY
Sta 118+10 RT	126 SY

Legend

- Salvaged Base Course
- Commercial Grade Hot Mix Asphalt
- Pigmented Imprinted Concrete
- Sidewalk Concrete
- Concrete Median Nose Paving
- Driveway Concrete 8IN

N

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12TH AVENUE NORTH RECONSTRUCTION

PLAN & PROFILE

STA 112+50 - 119+50

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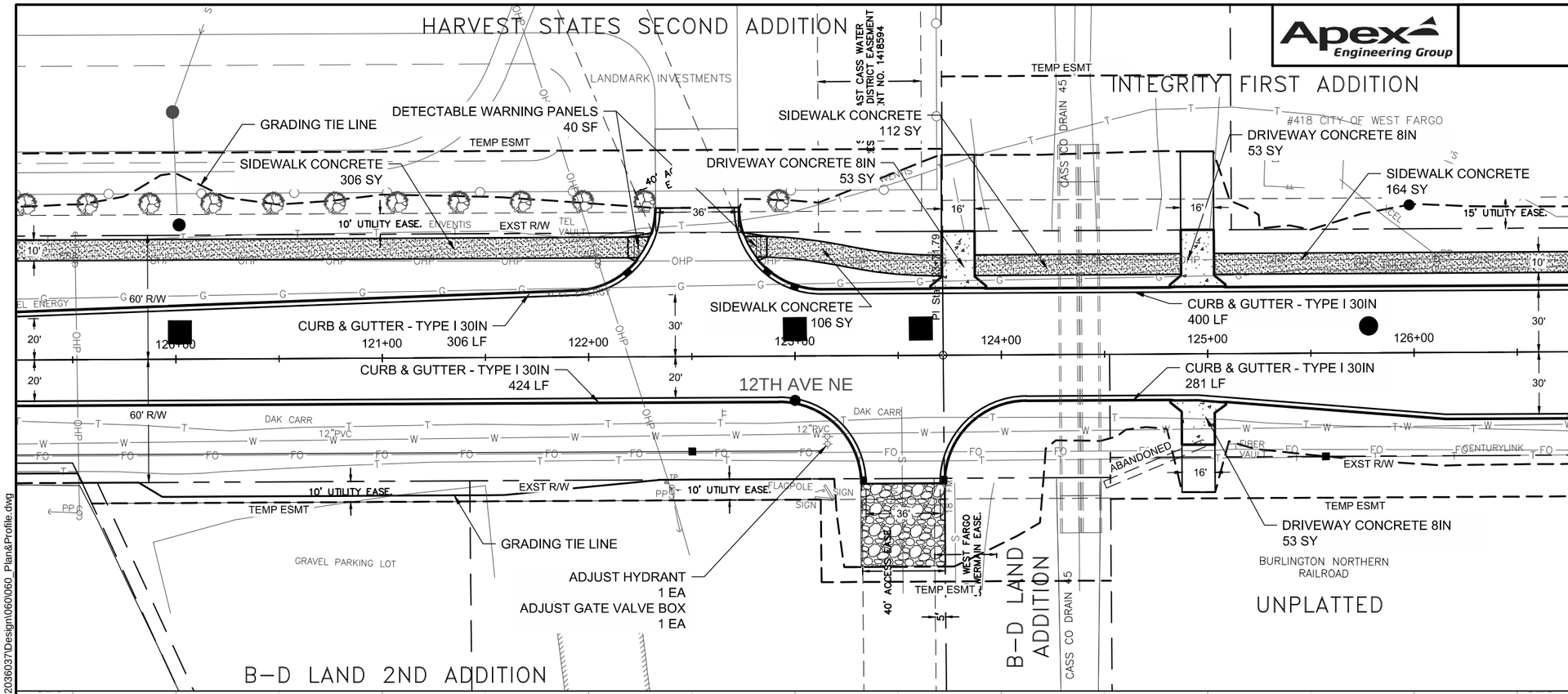
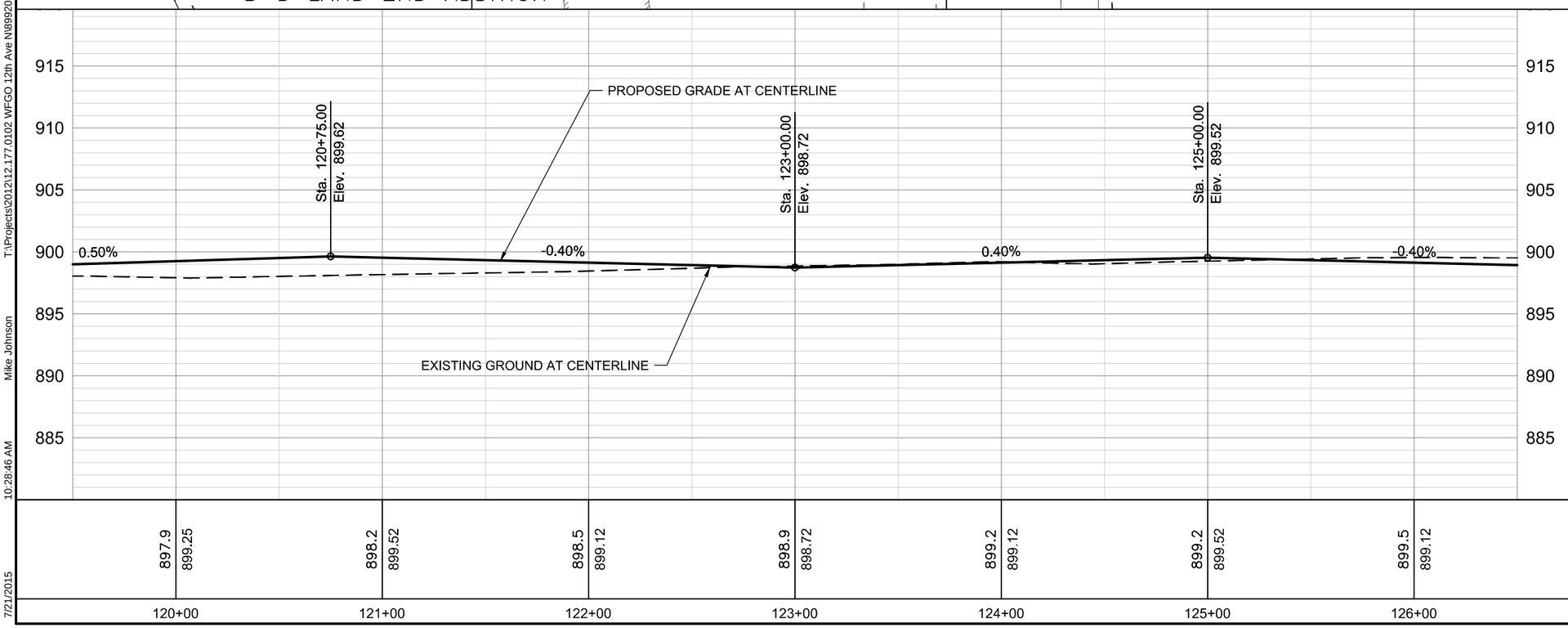
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	9





302 0100 SALVAGED BASE COURSE

Sta 119+50 to Sta 126+50	3087 TON
Sta 119+50 to Sta 122+31 LT - SIDEWALK	65 TON
Sta 122+75 to Sta 123+71 LT - SIDEWALK	22 TON
Sta 123+80 LT - DRIVEWAY	12 TON
Sta 123+87 to Sta 124+87 LT - SIDEWALK	24 TON
Sta 124+95 LT - DRIVEWAY	12 TON
Sta 124+95 RT - DRIVEWAY	12 TON
Sta 125+03 to Sta 126+50 LT - SIDEWALK	34 TON

550 0312 10.5IN NON REINF CONCRETE PVMT CL AE - DOWELED

Sta 119+50 to Sta 126+50	4390 SY

722 6140 ADJUST GATE VALVE BOX

Sta 123+15 RT	1 EA

724 0427 ADJUST HYDRANT

Sta 123+15 RT	1 EA

748 0190 CURB & GUTTER - TYPE I 30IN

Sta 119+50 to Sta 122+33 LT	306 LF
Sta 122+33 to Sta 126+50 LT	400 LF
Sta 119+50 to Sta 123+30 RT	404 LF
Sta 123+70 to Sta 126+50 RT	301 LF

750 0100 SIDEWALK CONCRETE

Sta 119+50 to Sta 122+31 LT	310 SY
Sta 122+75 to Sta 123+71 LT	106 SY
Sta 123+87 to Sta 124+87 LT	112 SY
Sta 125+03 to Sta 126+50 LT	164 SY

750 1020 DRIVEWAY CONCRETE 8IN

Sta 123+80 LT	53 SY
Sta 124+95 LT	53 SY
Sta 124+95 RT	53 SY

750 2115 DETECTABLE WARNING PANELS

Sta 122+22 LT	20 SF
Sta 122+83 LT	20 SF

Legend

- Salvaged Base Course
- Commercial Grade Hot Mix Asphalt
- Pigmented Imprinted Concrete
- Sidewalk Concrete
- Concrete Median Nose Paving
- Driveway Concrete 8IN

N

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12TH AVENUE NORTH RECONSTRUCTION

PLAN & PROFILE

STA 119+50 - 126+50

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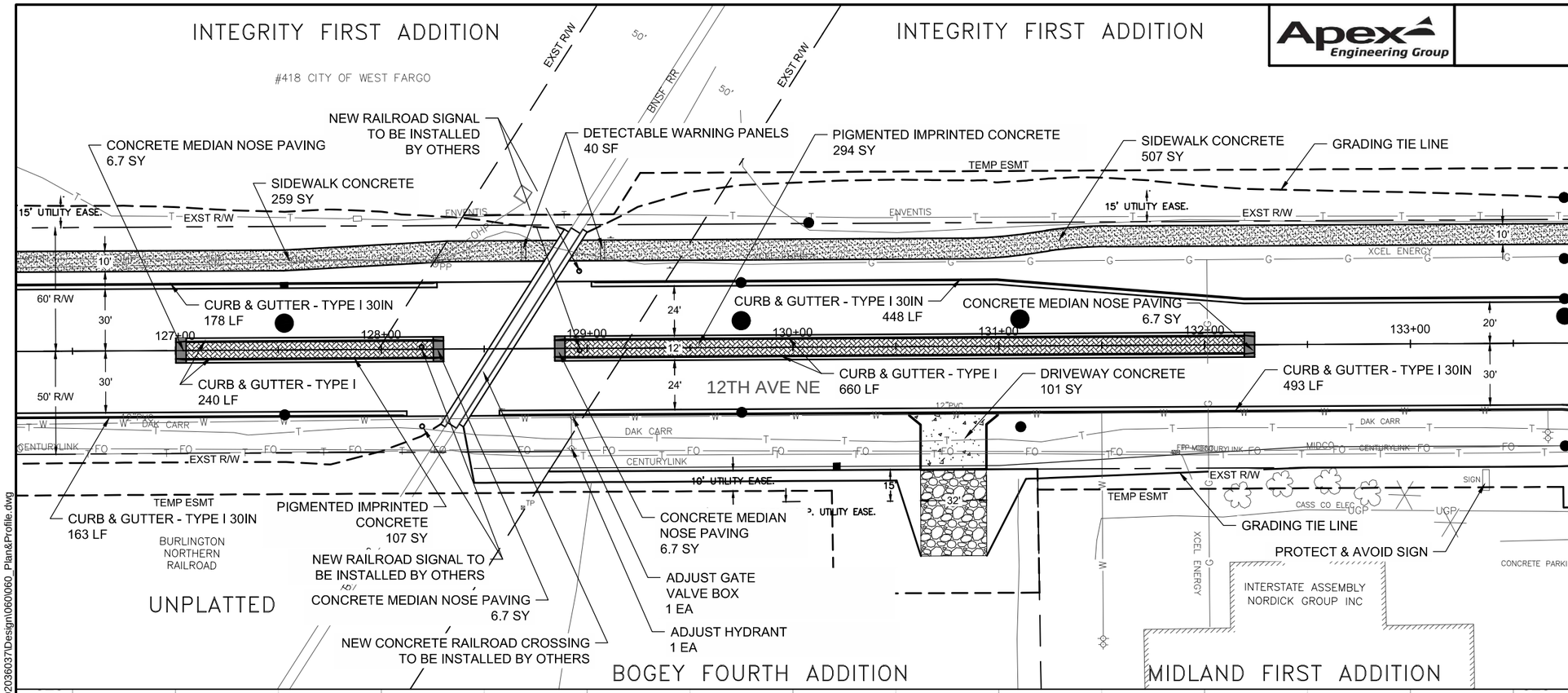
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	10



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7/23/2015

302 0100 SALVAGED BASE COURSE

Sta 126+50 to Sta 133+50	3125 TON
Sta 126+50 to Sta 128+85 LT - SIDEWALK	54 TON
Sta 128+92 to Sta 133+50 LT - SIDEWALK	106 TON
Sta 130+75 RT - DRIVEWAY	22 TON

550 0312 10.5IN NON REINF CONCRETE PVMT CL AE - DOWELED

Sta 126+50 to Sta 133+50	4134 SY

722 6140 ADJUST GATE VALVE BOX

Sta 128+93 RT	1 EA

724 0427 ADJUST HYDRANT

Sta 128+93 RT	1 EA

748 0140 CURB & GUTTER - TYPE I

Sta 127+05 to Sta 128+50	240 LF
Sta 128+90 to Sta 131+00	660 LF

748 0190 CURB & GUTTER - TYPE I 30IN

Sta 126+50 to Sta 128+28 LT	178 LF
Sta 126+50 to Sta 128+13 RT	163 LF
Sta 128+57 to Sta 133+50 RT	493 LF
Sta 129+02 to Sta 133+50 LT	448 LF

750 0030 PIGMENTED IMPRINTED CONCRETE

Sta 127+05 to Sta 128+25	107 SY
Sta 128+90 to Sta 131+00	294 SY

750 0100 SIDEWALK CONCRETE

Sta 126+50 to Sta 128+85 LT	259 SY
Sta 128+92 to Sta 133+50 LT	507 SY

750 0210 CONCRETE MEDIAN NOSE PAVING

Sta 127+00	6.7 SY
Sta 128+30	6.7 SY
Sta 128+85	6.7 SY
Sta 131+05	6.7 SY

750 1020 DRIVEWAY CONCRETE 8IN

Sta 130+75 RT	101 SY

750 2115 DETECTABLE WARNING PANELS

Sta 128+69	20 SF
Sta 129+08	20 SF

Notes:

1. Refer to Standard Drawing D-900-02 for grading and paving transitions at the railroad crossing.

Legend

- Salvaged Base Course
- Commercial Grade Hot Mix Asphalt
- Pigmented Imprinted Concrete
- Sidewalk Concrete
- Concrete Median Nose Paving
- Driveway Concrete 8IN

N

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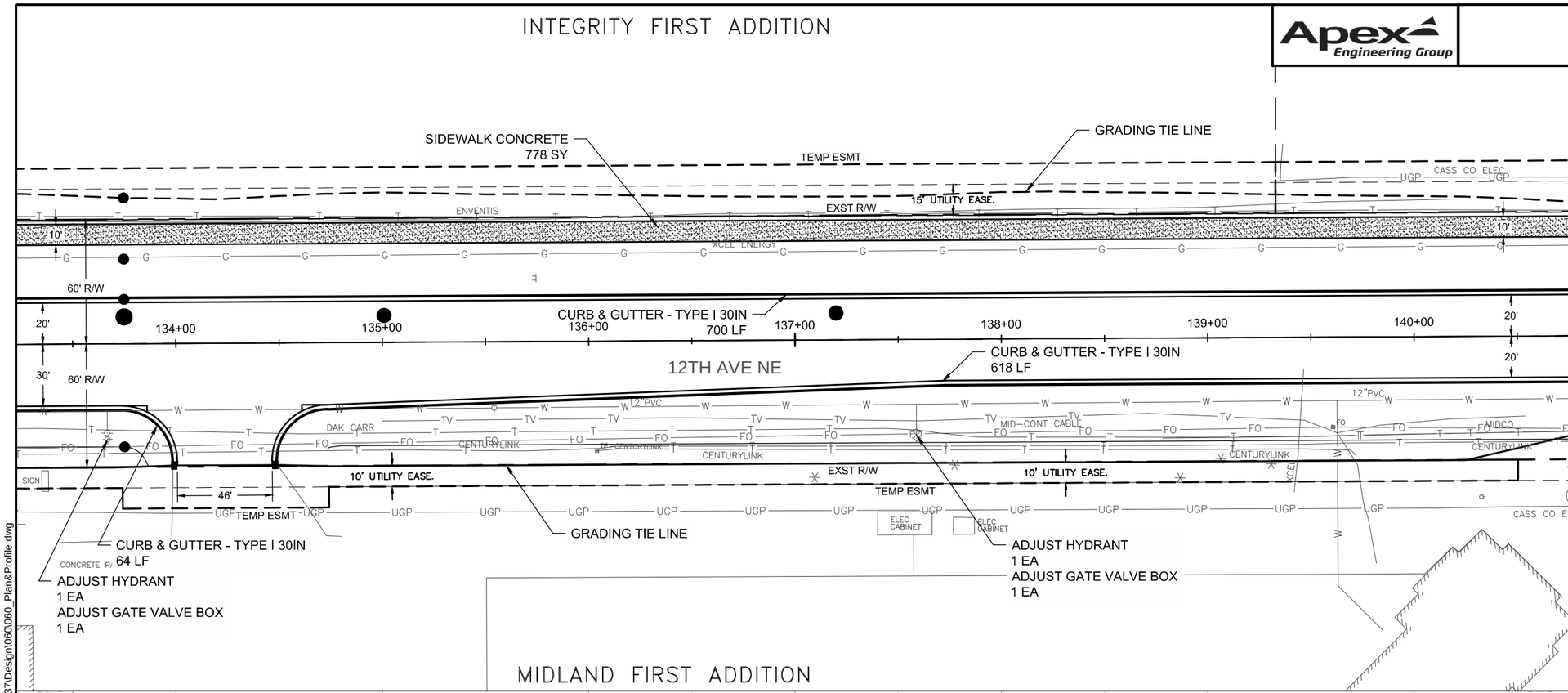
12TH AVENUE NORTH RECONSTRUCTION

PLAN & PROFILE

STA 126+50 - 133+50

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	11



302 0100 SALVAGED BASE COURSE

Sta 133+50 to Sta 140+50	2586 TON
Sta 133+50 to Sta 140+50 LT - SIDEWALK	163 TON

550 0312 10.5IN NON REINF CONCRETE PVMT CL AE - DOWELED

Sta 133+50 to Sta 140+50	3599 SY

722 6140 ADJUST GATE VALVE BOX

Sta 133+65 RT	1 EA
Sta 137+65 RT	1 EA

724 0427 ADJUST HYDRANT

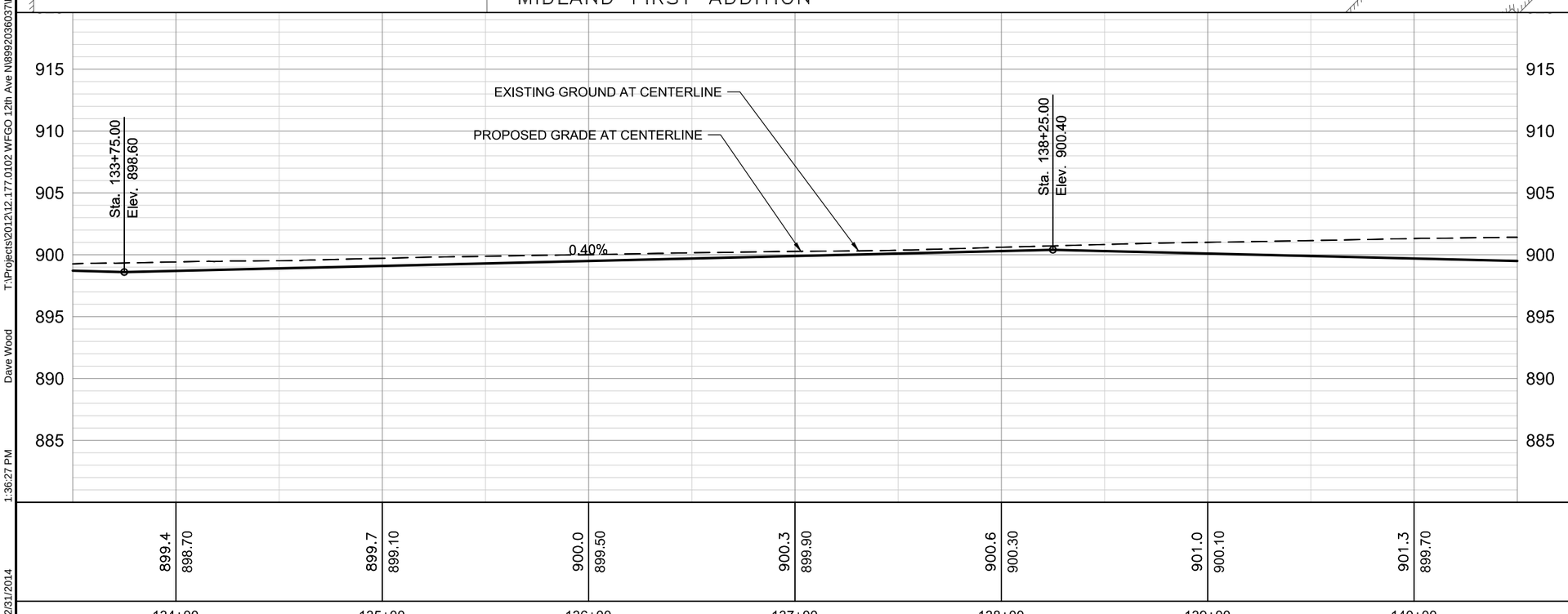
Sta 133+65 RT	1 EA
Sta 137+65 RT	1 EA

748 0190 CURB & GUTTER - TYPE I 30IN

Sta 133+50 to Sta 140+50 LT	700 LF
Sta 133+50 to Sta 134+00 RT	64 LF
Sta 134+50 to Sta 140+50 RT	618 LF

750 0100 SIDEWALK CONCRETE

Sta 133+50 to Sta 140+50 LT	778 SY



Legend

- Salvaged Base Course
- Commercial Grade Hot Mix Asphalt
- Pigmented Imprinted Concrete
- Sidewalk Concrete
- Concrete Median Nose Paving
- Driveway Concrete 8IN

N

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12TH AVENUE NORTH RECONSTRUCTION

PLAN & PROFILE

STA 133+50 - 140+50

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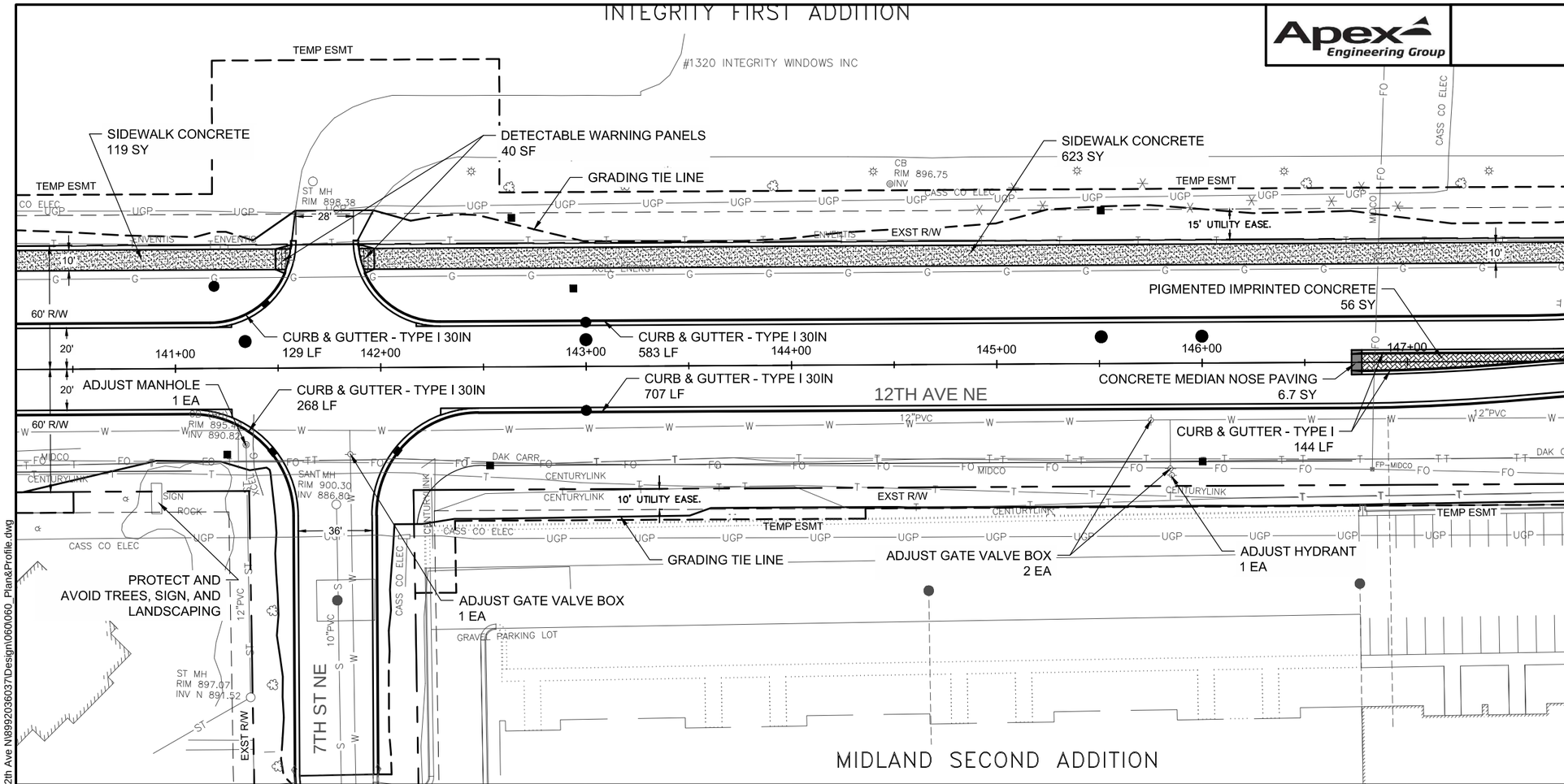

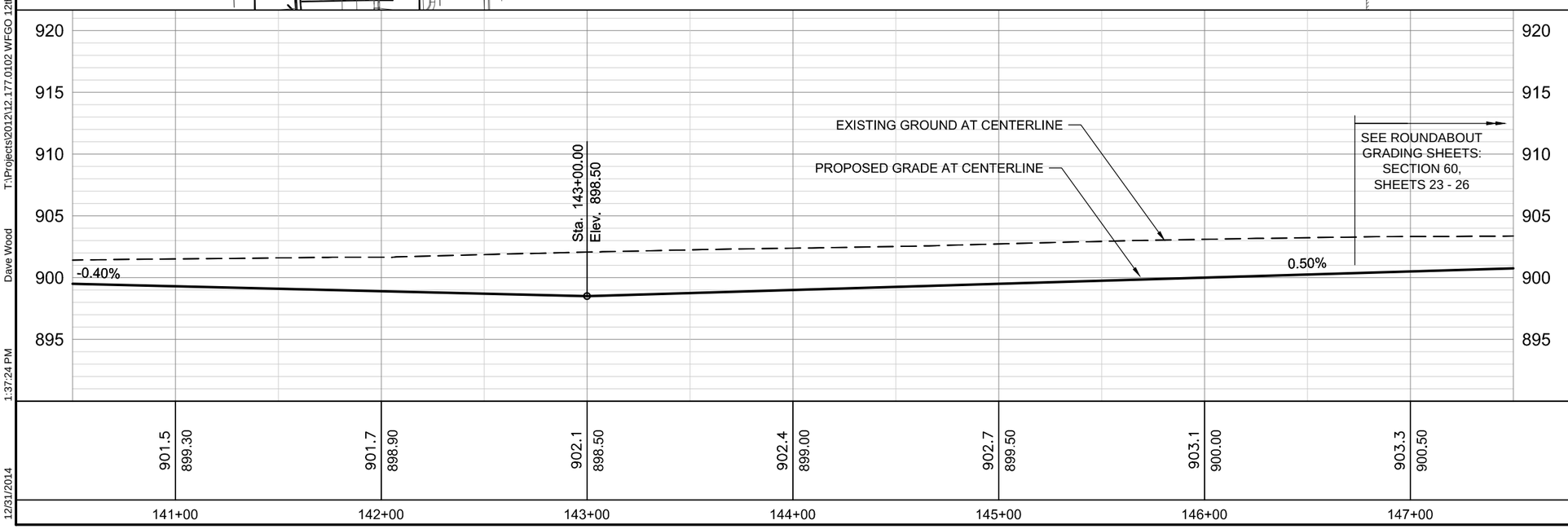

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	12

302 0100 SALVAGED BASE COURSE

Sta 140+50 to Sta 147+50	3049 TON
Sta 140+50 to Sta 141+55 LT - SIDEWALK	25 TON
Sta 141+90 to Sta 147+50 LT - SIDEWALK	130 TON

550 0312 10.5IN NON REINF CONCRETE PVMT CL AE - DOWELED

Sta 140+50 to Sta 147+50	4123 SY

722 6140 ADJUST GATE VALVE BOX

Sta 141+85 RT	1 EA
Sta 145+75 RT	1 EA
Sta 145+85 RT	1 EA

722 6200 ADJUST MANHOLE

Sta 141+35 RT	1 EA

724 0427 ADJUST HYDRANT

Sta 145+85 RT	1 EA

748 0140 CURB & GUTTER - TYPE I

Sta 146+05 to Sta 147+50	144 LF

748 0190 CURB & GUTTER - TYPE I 30IN

Sta 140+50 to Sta 141+55 LT	129 LF
Sta 140+50 to Sta 141+55 RT	268 LF
Sta 141+90 to Sta 147+50 LT	583 LF
Sta 142+00 to Sta 147+50 RT	707 LF

750 0030 PIGMENTED IMPRINTED CONCRETE

Sta 146+78 to Sta 147+50	56 SY

750 0100 SIDEWALK CONCRETE

Sta 140+50 to Sta 141+55 LT	119 SY
Sta 141+90 to Sta 147+50 LT	623 SY

750 0210 CONCRETE MEDIAN NOSE PAVING

Sta 146+73	6.7 SY

750 2115 DETECTABLE WARNING PANELS

Sta 141+55 LT	20 SF
Sta 141+90 LT	20 SF

Notes:

1. Refer to Section 60 - Roundabout Grading sheets for additional information.

Legend

- Salvaged Base Course
- Commercial Grade Hot Mix Asphalt
- Pigmented Imprinted Concrete
- Sidewalk Concrete
- Concrete Median Nose Paving
- Driveway Concrete 8IN

N

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12TH AVENUE NORTH RECONSTRUCTION

PLAN & PROFILE

STA 140+50 - 147+50

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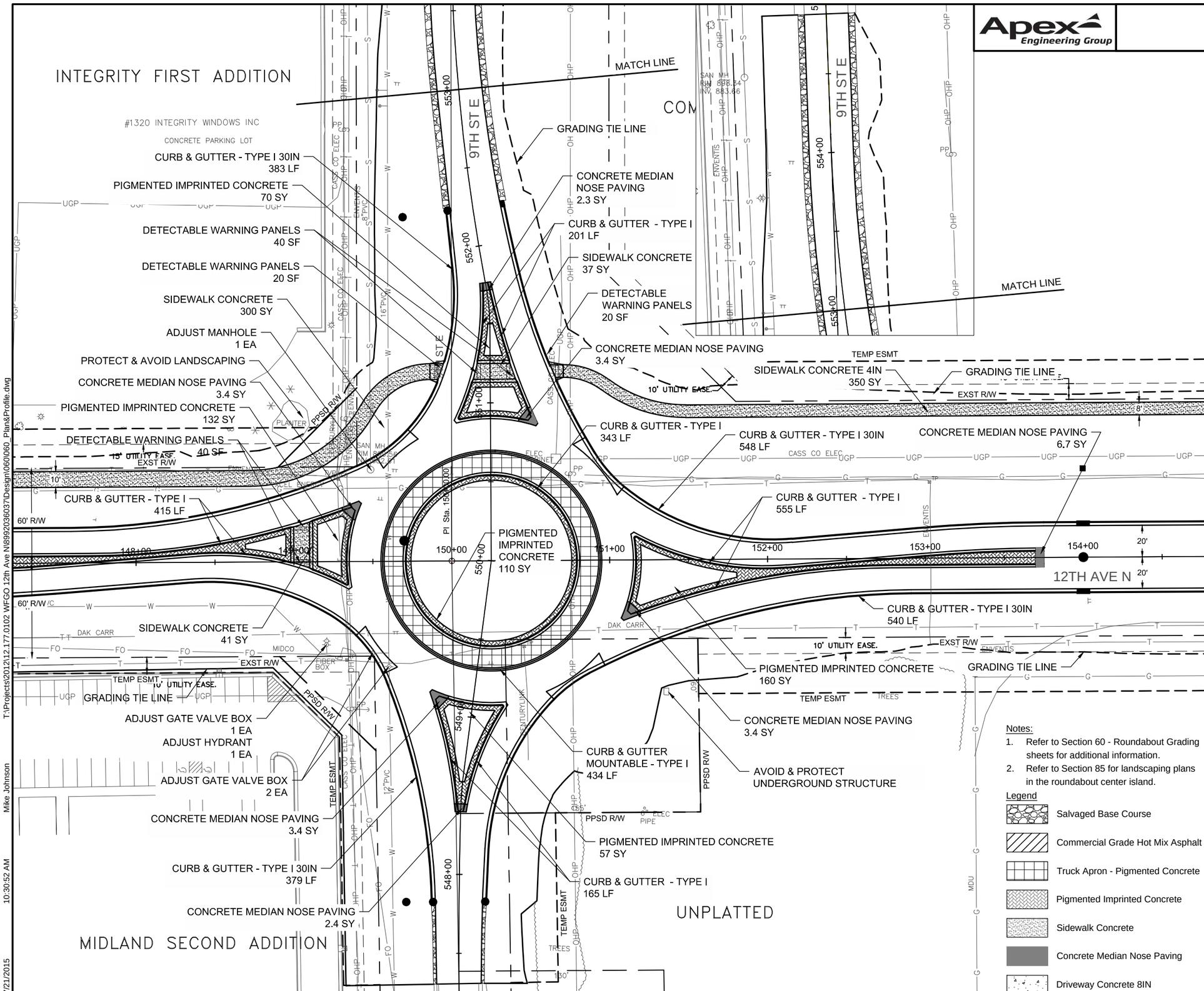

Apex Engineering Group

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	13

302 0100 SALVAGED BASE COURSE	
Sta 147+50 to Sta 154+50	5117 TON
NW QUADRANT - SIDEWALK	63 TON
NE QUADRANT - SIDEWALK	73 TON
NORTH LEG - SHOULDERS	127 TON
SOUTH LEG - SHOULDERS	14 TON
550 0312 10.5IN NON REINF CONCRETE PVMT CL AE - DOWELED	
Sta 147+50 to Sta 154+50	5312 SY
TRUCK APRON - ROUNDABOUT	520 SY
722 6140 ADJUST GATE VALE BOX	
Sta 149+20 RT	1 EA
Sta 149+50 RT	1 EA
Sta 149+60 RT	1 EA
722 6200 ADJUST MANHOLE	
Sta 149+50 RT	1 EA
724 0427 ADJUST HYDRANT	
Sta 149+20 LT	1 EA
748 0120 CURB & GUTTER MOUNTABLE - TYPE I	
TRUCK APRON - COLORED CONCRETE ROUNDABOUT	434 LF
748 0140 CURB & GUTTER - TYPE I	
WEST SPLITTER ISLAND	415 LF
EAST SPLITTER ISLAND	555 LF
SOUTH SPLITTER ISLAND	165 LF
NORTH SPLITTER ISLAND	201 LF
TRUCK APRON - ROUNDABOUT	343 LF
748 0190 CURB & GUTTER - TYPE I 30IN	
NW QUADRANT	383 LF
NE QUADRANT	548 LF
SW QUADRANT	379 LF
SE QUADRANT	540 LF
750 0030 PIGMENTED IMPRINTED CONCRETE	
WEST SPLITTER ISLAND	132 SY
EAST SPLITTER ISLAND	160 SY
SOUTH SPLITTER ISLAND	57 SY
NORTH SPLITTER ISLAND	70 SY
ROUNDABOUT	110 SY
750 0100 SIDEWALK CONCRETE	
NW QUADRANT	300 SY
WEST SPLITTER ISLAND	41 SY
NORTH SPLITTER ISLAND	37 SY
750 0115 SIDEWALK CONCRETE 4IN	
NE QUADRANT	350 SY
750 0210 CONCRETE MEDIAN NOSE PAVING	
WEST SPLITTER ISLAND	3.4 SY
EAST SPLITTER ISLAND	10.1 SY
SOUTH SPLITTER ISLAND	5.8 SY
NORTH SPLITTER ISLAND	5.7 SY
750 2115 DETECTABLE WARNING PANELS	
WEST SPLITTER ISLAND	40 SF
NORTH SPLITTER ISLAND	40 SF
Sta 149+95 LT	20 SF
Sta 150+60 LT	20 SF

Notes:

1. Refer to Section 60 - Roundabout Grading sheets for additional information.
2. Refer to Section 85 for landscaping plans in the roundabout center island.

Legend

- Salvaged Base Course
- Commercial Grade Hot Mix Asphalt
- Truck Apron - Pigmented Concrete
- Pigmented Imprinted Concrete
- Sidewalk Concrete
- Concrete Median Nose Paving
- Driveway Concrete 8IN

N

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12TH AVENUE NORTH RECONSTRUCTION

PLAN & PROFILE

STA 147+50 - 154+50

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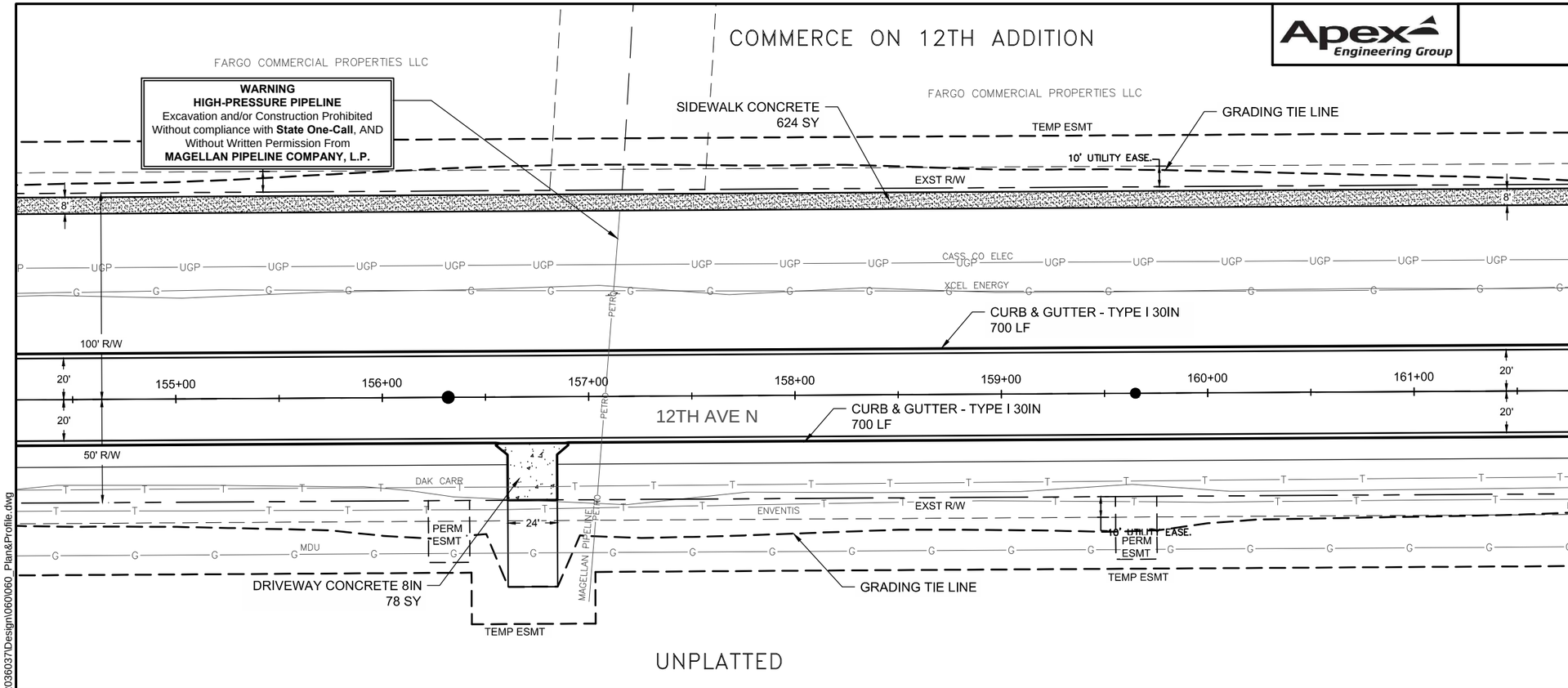
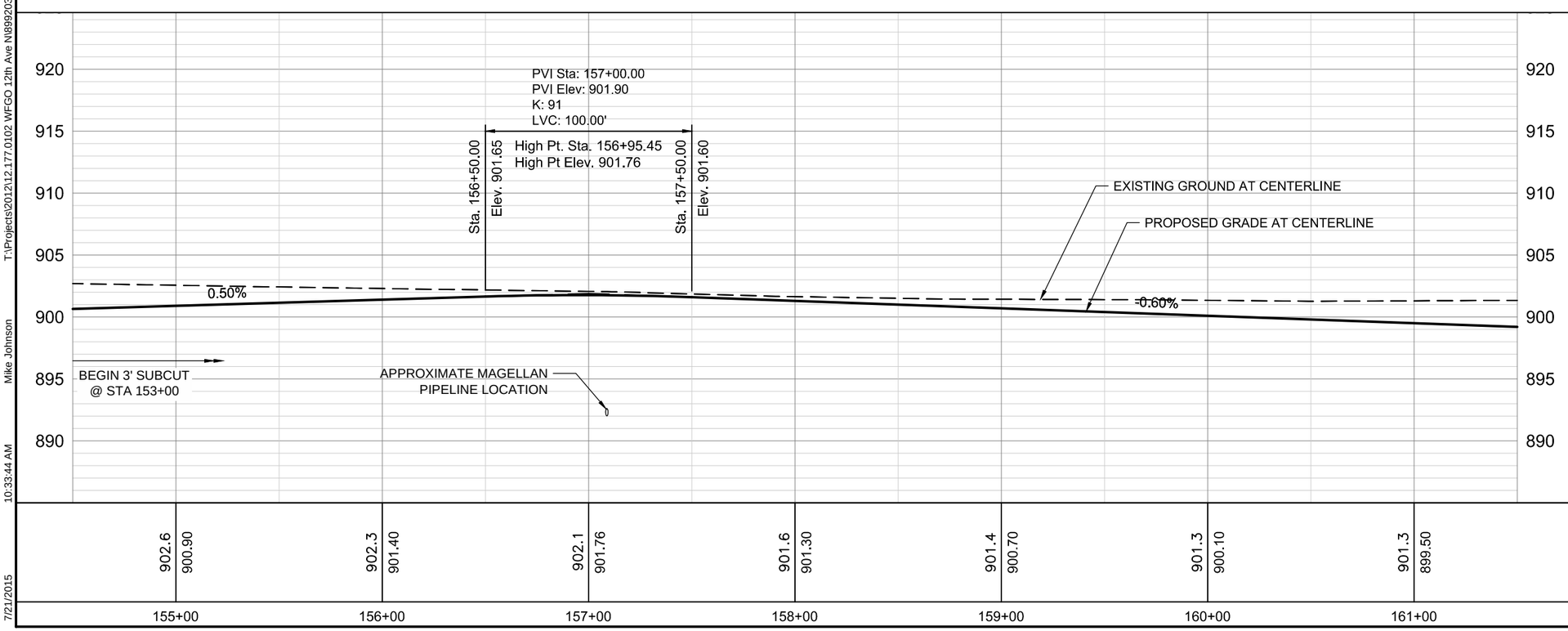
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	14





302 0100 SALVAGED BASE COURSE

Sta 154+50 to Sta 161+50	2285 TON
Sta 154+50 to Sta 161+50 LT - SIDEWALK	130 TON
Sta 156+70 RT - DRIVEWAY	17 TON

550 0312 10.5IN NON REINF CONCRETE PVMT CL AE - DOWELED

Sta 154+50 to Sta 161+50	3112 SY

748 0190 CURB & GUTTER - TYPE I 30IN

Sta 154+50 to Sta 161+50 LT	700 LF
Sta 154+50 to Sta 161+50 RT	700 LF

750 0115 SIDEWALK CONCRETE 4IN

Sta 154+50 to Sta 161+50 LT	624 SY

750 1020 DRIVEWAY CONCRETE 8IN

Sta 156+70 RT	78 SY

Legend

- Salvaged Base Course
- Commercial Grade Hot Mix Asphalt
- Pigmented Imprinted Concrete
- Sidewalk Concrete
- Concrete Median Nose Paving
- Driveway Concrete 8IN

N

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12TH AVENUE NORTH RECONSTRUCTION

PLAN & PROFILE

STA 154+50 - 161+50

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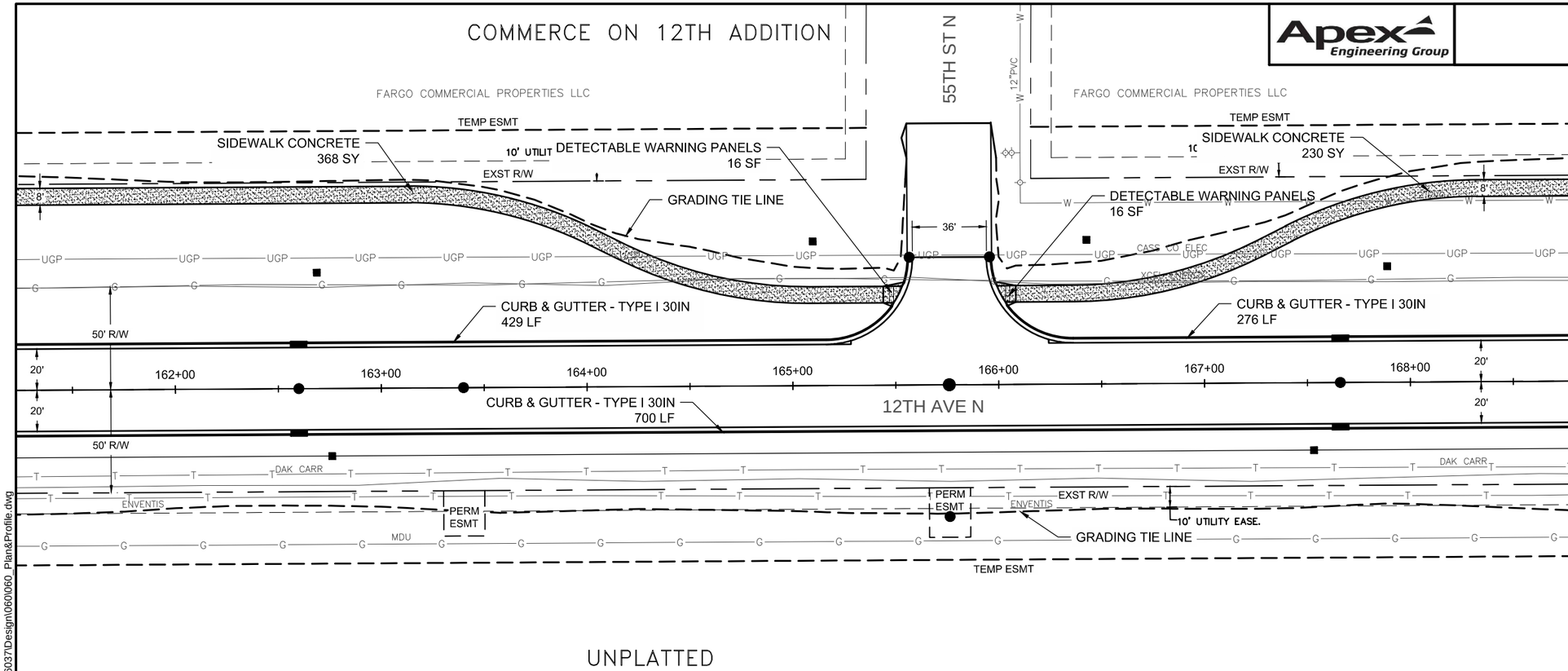
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	15



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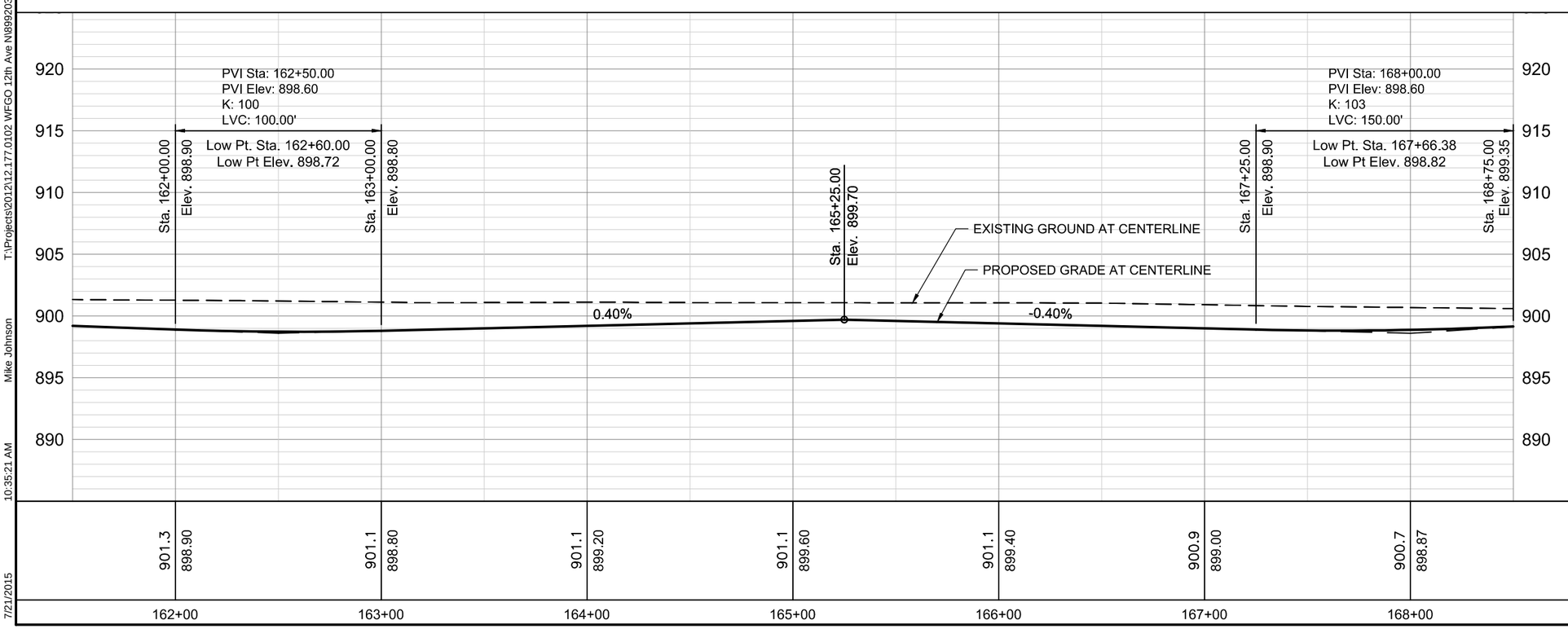

302 0100 SALVAGED BASE COURSE

Sta 161+50 to Sta 168+50	2444 TON
Sta 161+50 to Sta 165+55 LT - SIDEWALK	77 TON
Sta 166+00 to Sta 168+50 LT - SIDEWALK	48 TON

550 0312 10.5IN NON REINF CONCRETE PVMT CL AE - DOWELED

Sta 161+50 to Sta 168+50	3364 SY

748 0190 CURB & GUTTER - TYPE I 30IN

Sta 161+50 to Sta 165+55 LT	429 LF
Sta 161+50 to Sta 168+50 RT	700 LF
Sta 165+95 to Sta 168+50 RT	276 LF

750 0115 SIDEWALK CONCRETE 4IN

Sta 161+50 to Sta 165+55 LT	368 SY
Sta 166+00 to Sta 168+50 LT	230 SY

750 2115 DETECTABLE WARNING PANELS

Sta 165+48 LT	16 SF
Sta 166+05 LT	16 SF

Legend

- Salvaged Base Course
- Commercial Grade Hot Mix Asphalt
- Pigmented Imprinted Concrete
- Sidewalk Concrete
- Concrete Median Nose Paving
- Driveway Concrete 8IN

N

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12TH AVENUE NORTH RECONSTRUCTION

PLAN & PROFILE

STA 161+50 - 168+50

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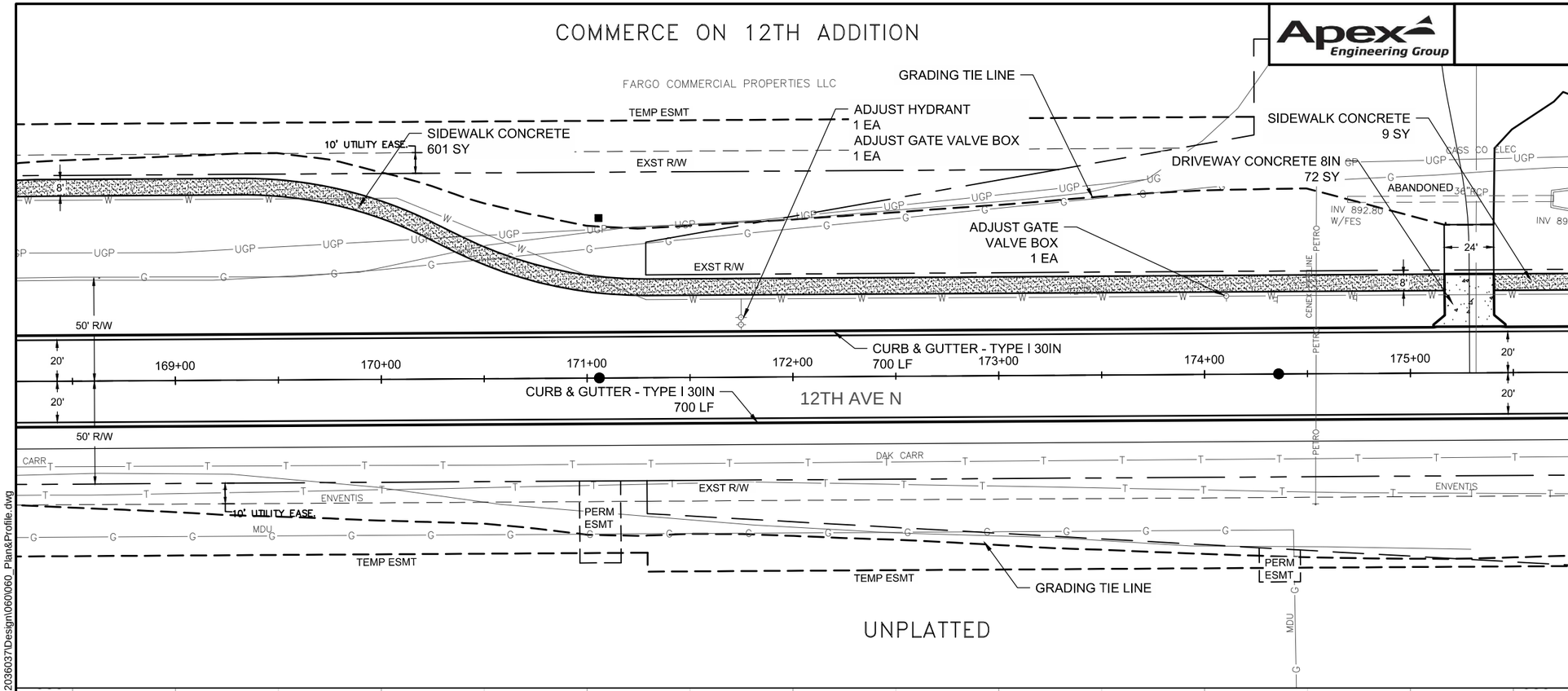
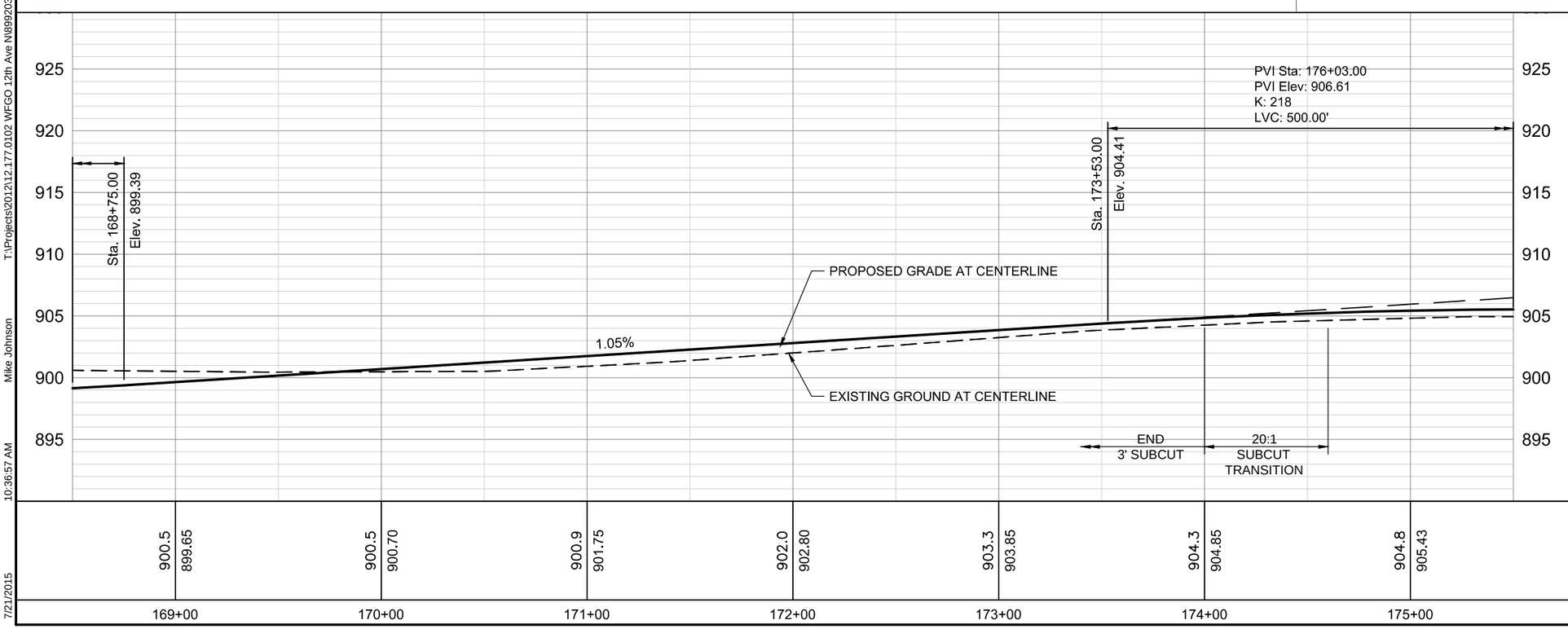
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	16





302 0100 SALVAGED BASE COURSE

Sta 168+50 to Sta 175+50	2285 TON
Sta 168+50 to Sta 175+17 LT - SIDEWALK	126 TON
Sta 175+30 LT - DRIVEWAY	15 TON
Sta 175+41 to Sta 175+50 LT - SIDEWALK	2 TON

550 0312 10.5IN NON REINF CONCRETE PVMT CL AE - DOWELED

Sta 168+50 to Sta 175+50	3112 SY

722 6140 ADJUST GATE VALVE BOX

Sta 171+75 LT	1 EA
Sta 174+11 LT	1 EA

724 0427 ADJUST HYDRANT

Sta 171+75 LT	1 EA

748 0190 CURB & GUTTER - TYPE I 30IN

Sta 168+50 to Sta 175+50 LT	700 LF
Sta 168+50 to Sta 175+50 RT	700 LF

750 0115 SIDEWALK CONCRETE 4IN

Sta 168+50 to Sta 175+17 LT	601 SY
Sta 175+41 to Sta 175+50 LT	9 SY

750 1020 DRIVEWAY CONCRETE 8IN

Sta 175+30 LT	72 SY

Legend

- Salvaged Base Course
- Commercial Grade Hot Mix Asphalt
- Pigmented Imprinted Concrete
- Sidewalk Concrete
- Concrete Median Nose Paving
- Driveway Concrete 8IN

N

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12TH AVENUE NORTH RECONSTRUCTION

PLAN & PROFILE

STA 168+50 - 175+50

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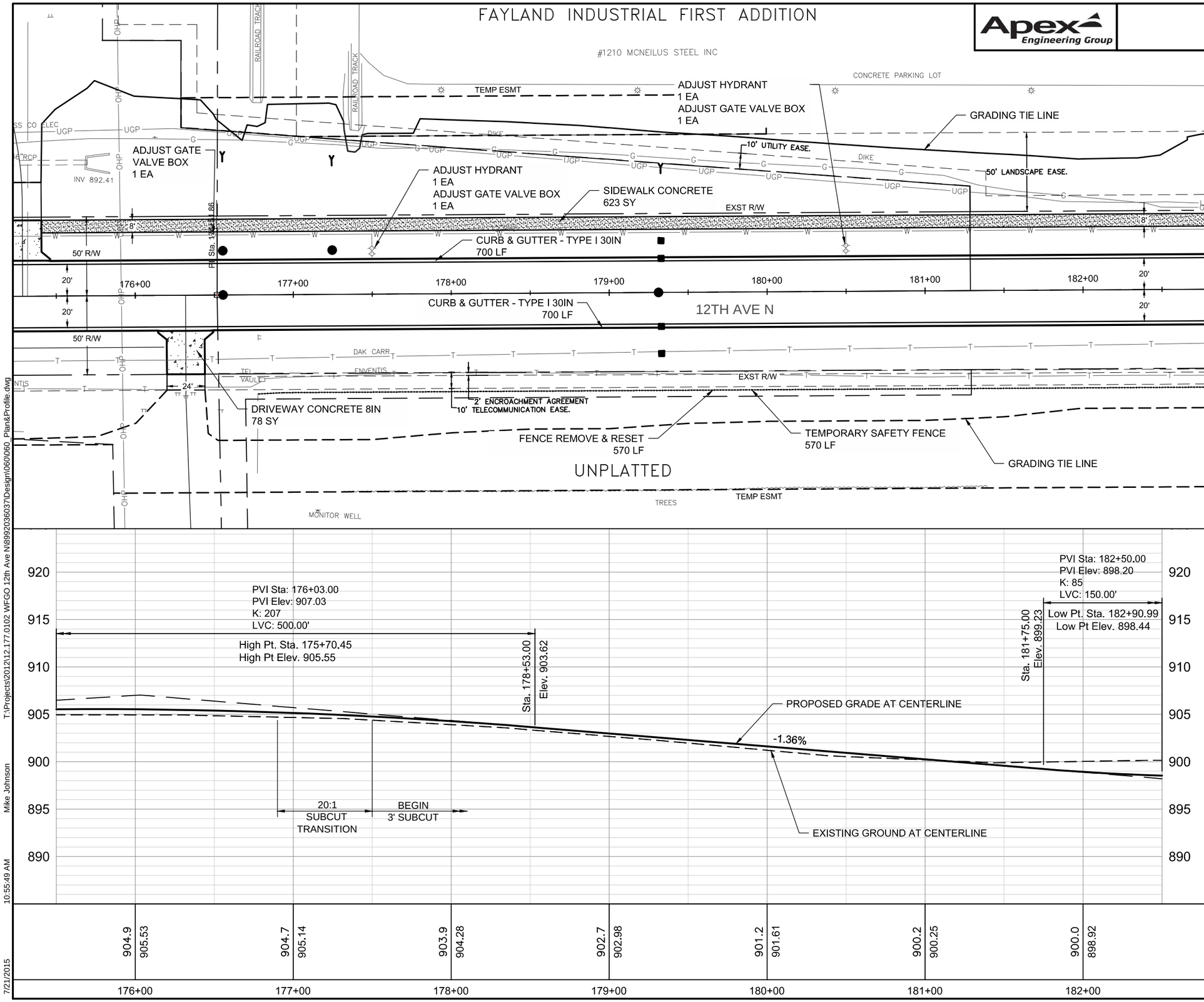

Apex Engineering Group

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	17

302 0100 SALVAGED BASE COURSE

Sta 175+50 to Sta 182+50	2286 TON
Sta 175+50 to Sta 182+50 LT - SIDEWALK	130 TON
Sta 176+30 RT - DRIVEWAY	17 TON

550 0312 10.5IN NON REINF CONCRETE PVMT CL AE - DOWELED

Sta 175+50 to Sta 182+50	3112 SY

722 6140 ADJUST GATE VALVE BOX

Sta 176+50 LT	1 EA
Sta 177+50 LT	1 EA
Sta 180+50 LT	1 EA

724 0427 ADJUST HYDRANT

Sta 177+50 LT	1 EA
Sta 180+50 LT	1 EA

748 0190 CURB & GUTTER - TYPE I 30IN

Sta 175+50 to Sta 182+50 LT	700 LF
Sta 175+50 to Sta 182+50 RT	700 LF

750 0115 SIDEWALK CONCRETE 4IN

Sta 175+50 to Sta 182+50 LT	623 SY

750 1020 DRIVEWAY CONCRETE 8IN

Sta 176+30 RT	78 SY

752 0911 TEMPORARY SAFETY FENCE

Sta 176+80 to Sta 182+50 RT	570 LF

752 0922 FENCE REMOVE & RESET

Sta 176+80 to Sta 182+50 RT	570 LF

Legend

- Salvaged Base Course
- Commercial Grade Hot Mix Asphalt
- Pigmented Imprinted Concrete
- Sidewalk Concrete
- Concrete Median Nose Paving
- Driveway Concrete 8IN

N

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12TH AVENUE NORTH RECONSTRUCTION

PLAN & PROFILE

STA 175+50 - 182+50

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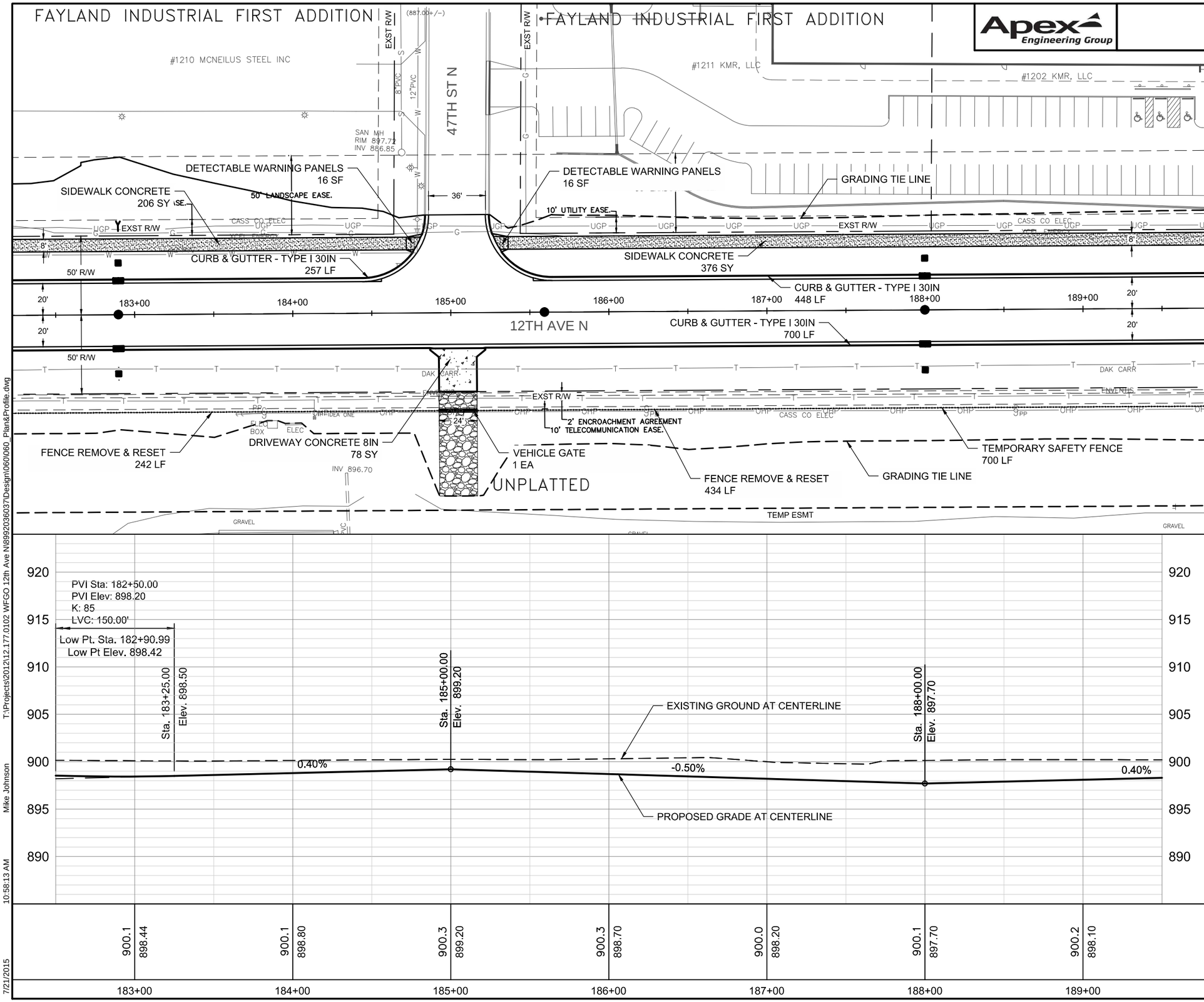
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	18

Apex Engineering Group



302 0100 SALVAGED BASE COURSE

Sta 182+50 to Sta 189+50	2444 TON
Sta 182+50 to Sta 184+80 LT - SIDEWALK	43 TON
Sta 185+05 RT - DRIVEWAY	17 TON
Sta 185+25 to Sta 189+50 LT - SIDEWALK	79 TON

550 0312 10.5IN NON REINF CONCRETE PVMT CL AE - DOWELED

Sta 182+50 to Sta 189+50	3364 SY

748 0190 CURB & GUTTER - TYPE I 30IN

Sta 182+50 to Sta 184+85 LT	257 LF
Sta 182+50 to Sta 189+50 RT	700 LF
Sta 185+25 to Sta 189+50 RT	448 LF

750 0115 SIDEWALK CONCRETE 4IN

Sta 182+50 to Sta 184+80 LT	206 SY
Sta 185+25 to Sta 189+50 LT	376 SY

750 1020 DRIVEWAY CONCRETE 8IN

Sta 185+05 RT	78 SY

750 2115 DETECTABLE WARNING PANELS

Sta 184+75 LT	16 SF
Sta 185+32 LT	16 SF

752 0911 TEMPORARY SAFETY FENCE

Sta 182+50 to Sta 189+50	700 LF

752 0922 FENCE REMOVE & RESET

Sta 182+50 to Sta 184+92 RT	242 LF
Sta 185+16 to Sta 189+50 RT	434 LF

752 2100 VEHICLE GATE

Sta 184+92 to Sta 185+16 RT	1 EA

Legend

- Salvaged Base Course
- Commercial Grade Hot Mix Asphalt
- Pigmented Imprinted Concrete
- Sidewalk Concrete
- Concrete Median Nose Paving
- Driveway Concrete 8IN

N

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12TH AVENUE NORTH RECONSTRUCTION

PLAN & PROFILE

STA 182+50 - 189+50

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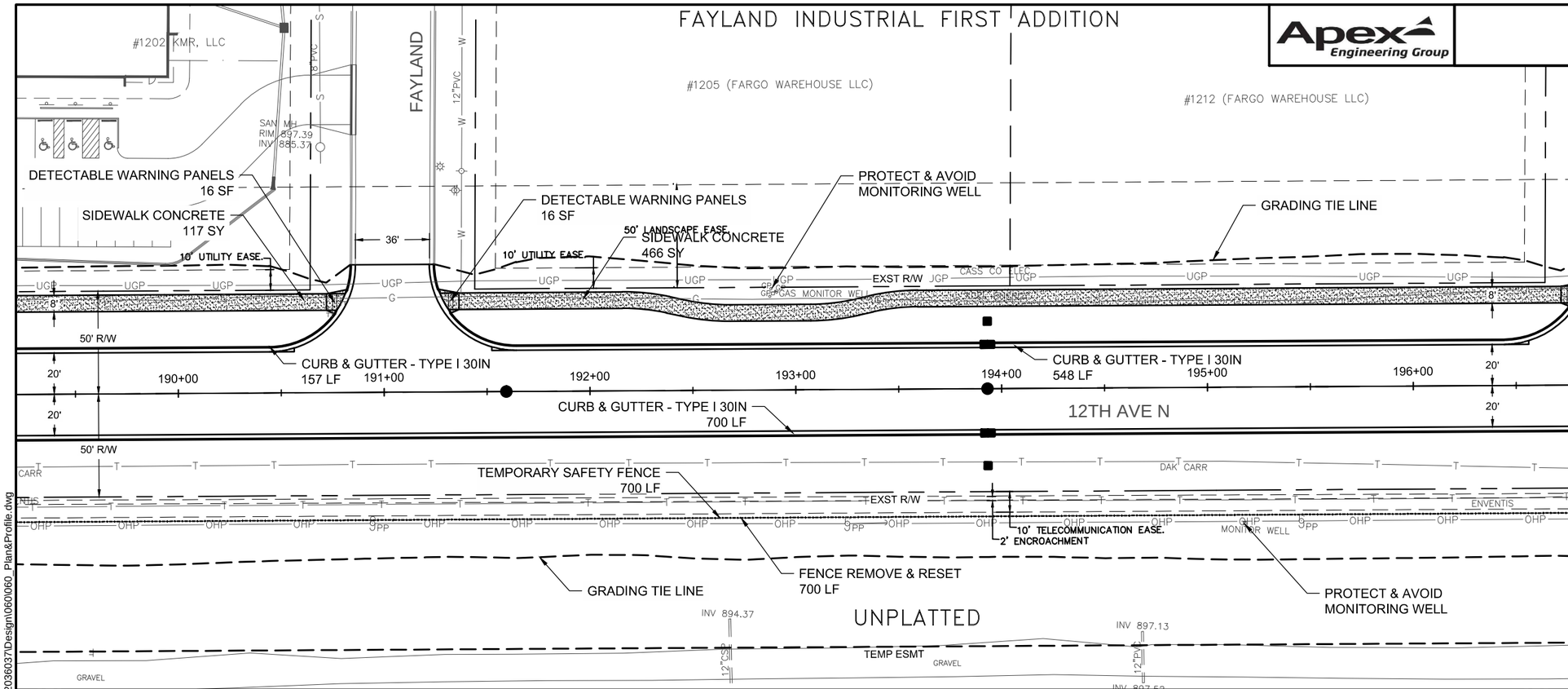
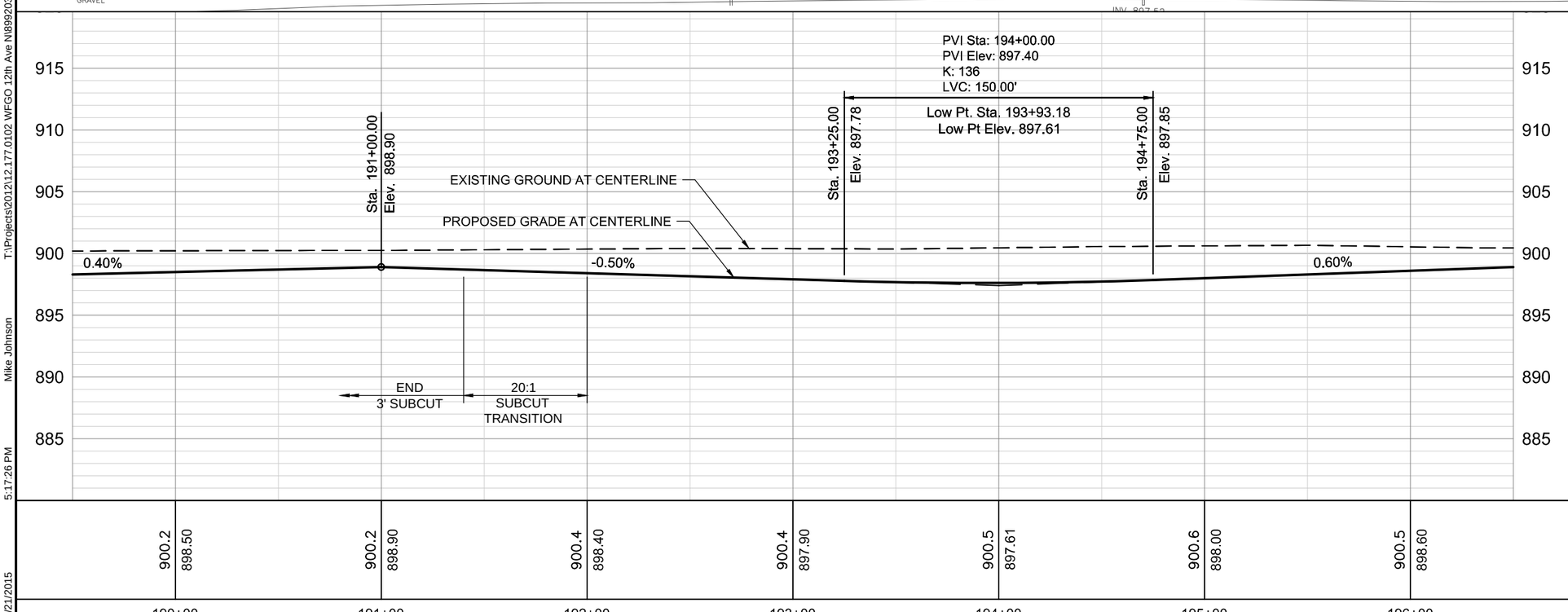
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	19





302 0100 SALVAGED BASE COURSE

Sta 189+50 to Sta 196+50	2444 TON
Sta 189+50 to Sta 190+80 LT - SIDEWALK	25 TON
Sta 191+30 to Sta 196+50 LT - SIDEWALK	97 TON

550 0312 10.5IN NON REINF CONCRETE PVMT CL AE - DOWELED

Sta 189+50 to Sta 196+50	3364 SY

748 0190 CURB & GUTTER - TYPE I 30IN

Sta 189+50 to Sta 190+85 LT	157 LF
Sta 189+50 to Sta 196+50 RT	700 LF
Sta 191+25 to Sta 196+50 RT	548 LF

750 0115 SIDEWALK CONCRETE 4IN

Sta 189+50 to Sta 190+80 LT	117 SY
Sta 191+30 to Sta 196+50 LT	466 SY

750 2115 DETECTABLE WARNING PANELS

Sta 190+75 LT	16 SF
Sta 191+32 LT	16 SF

752 0911 TEMPORARY SAFETY FENCE

Sta 189+50 to Sta 196+50 RT	700 LF

752 0922 FENCE REMOVE & RESET

Sta 189+50 to Sta 196+50 RT	700 LF

Legend

- Salvaged Base Course
- Commercial Grade Hot Mix Asphalt
- Pigmented Imprinted Concrete
- Sidewalk Concrete
- Concrete Median Nose Paving
- Driveway Concrete 8IN

N

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12TH AVENUE NORTH RECONSTRUCTION

PLAN & PROFILE

STA 189+50 - 196+50

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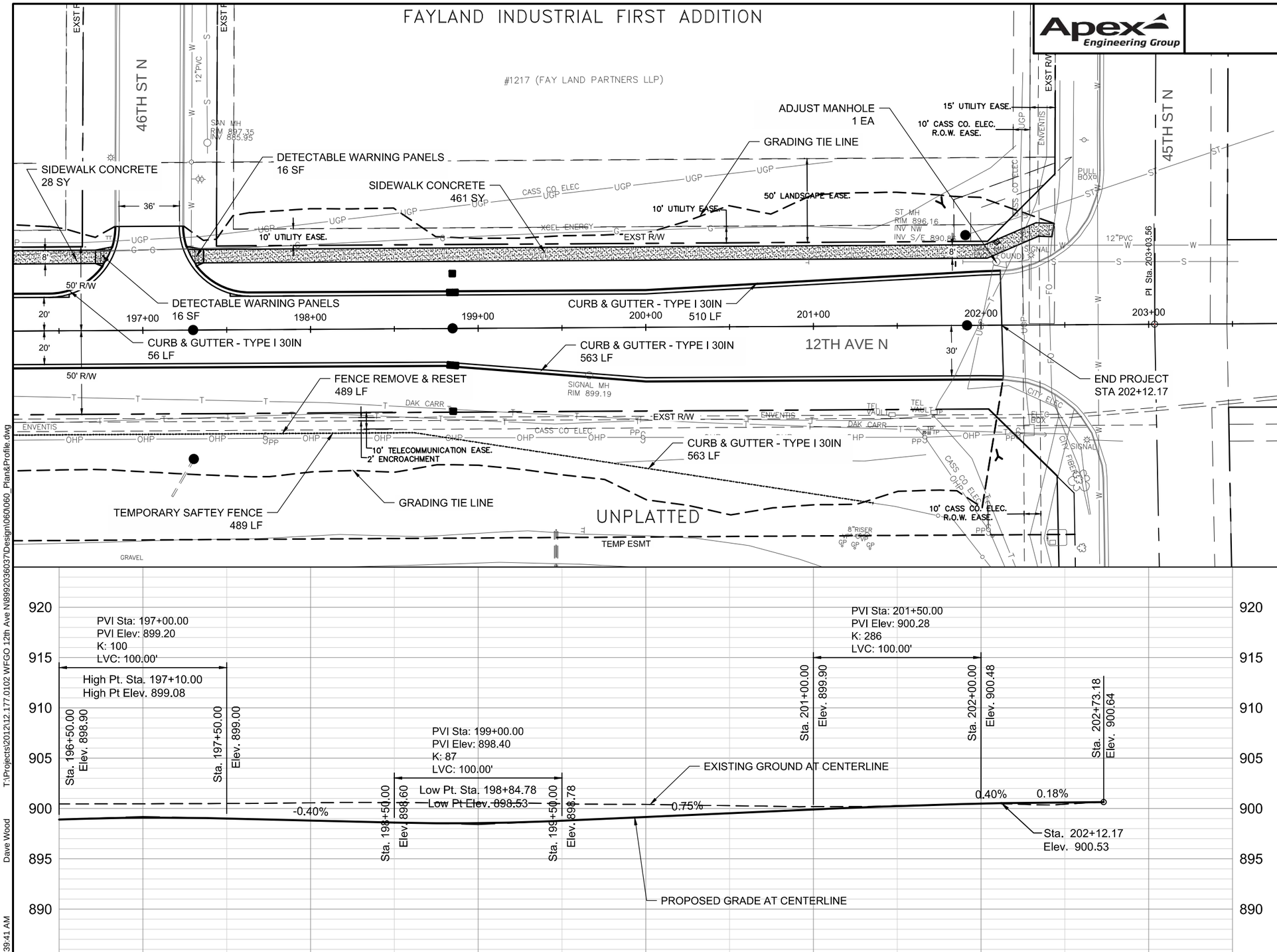
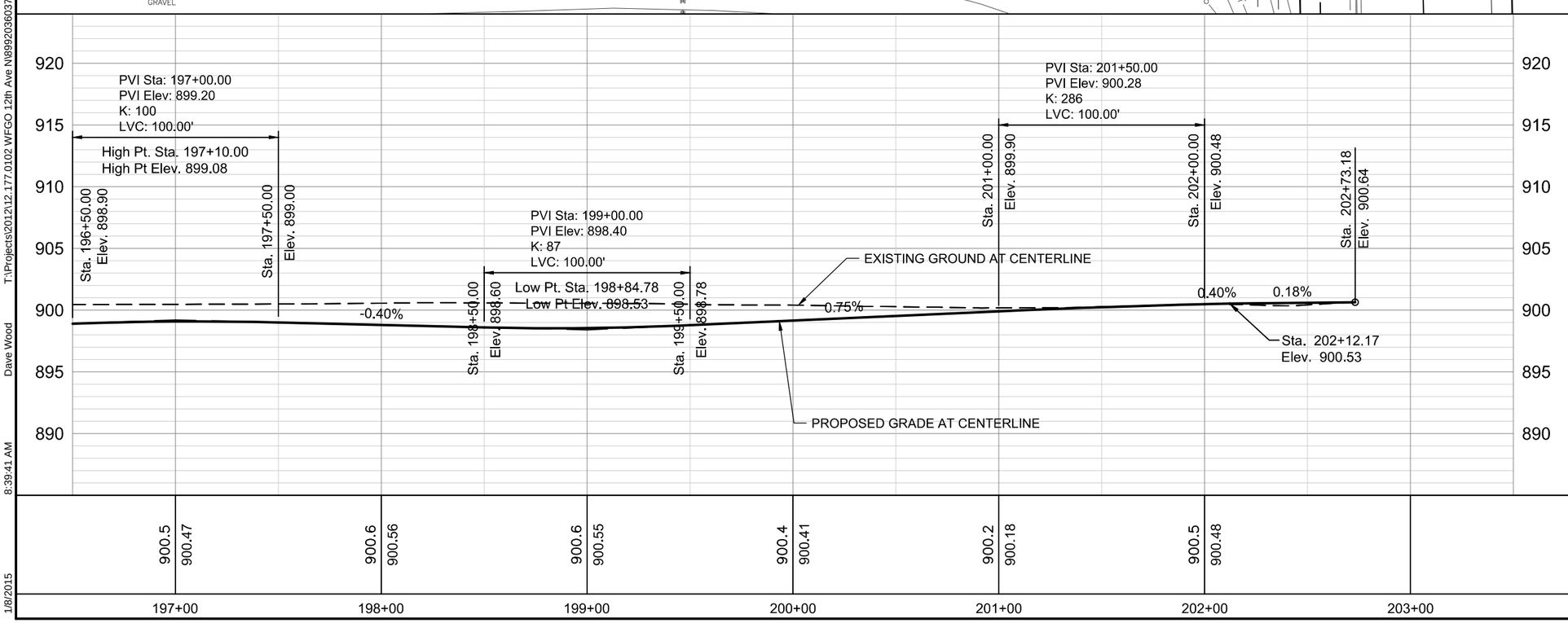
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	20

Apex Engineering Group





302 0100 SALVAGED BASE COURSE

Sta 196+50 to Sta 202+12	2263 TON
Sta 196+50 to Sta 196+80 LT - SIDEWALK	6 TON
Sta 197+85 to Sta 202+43 LT - SIDEWALK	96 TON

550 0312 10.5IN NON REINF CONCRETE PVMT CL AE - DOWELED

Sta 196+50 to Sta 202+12	3180 SY

722 6200 ADJUST MAHOLE

Sta 202+09 - 38' LT	1 EA

748 0190 CURB & GUTTER - TYPE I 30IN

Sta 196+50 to Sta 196+85 LT	56 LF
Sta 196+50 to Sta 202+12 RT	563 LF
Sta 197+25 to Sta 202+12 LT	510 LF

750 0115 SIDEWALK CONCRETE 4IN

Sta 196+50 to Sta 196+80 LT	28 SY
Sta 197+28 to Sta 202+43 LT	461 SY

750 2115 DETECTABLE WARNING PANELS

Sta 196+75 LT	16 SF
Sta 197+32 LT	16 SF

752 0911 TEMPORARY SAFETY FENCE

Sta 196+50 to Sta 301+35 RT	489 LF

752 0922 FENCE REMOVE & RESET

Sta 196+50 to Sta 301+35 RT	489 LF

Legend

- Salvaged Base Course
- Commercial Grade Hot Mix Asphalt
- Pigmented Imprinted Concrete
- Sidewalk Concrete
- Concrete Median Nose Paving
- Driveway Concrete 8IN

N

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12TH AVENUE NORTH RECONSTRUCTION

PLAN & PROFILE

STA 196+50 - 203+50

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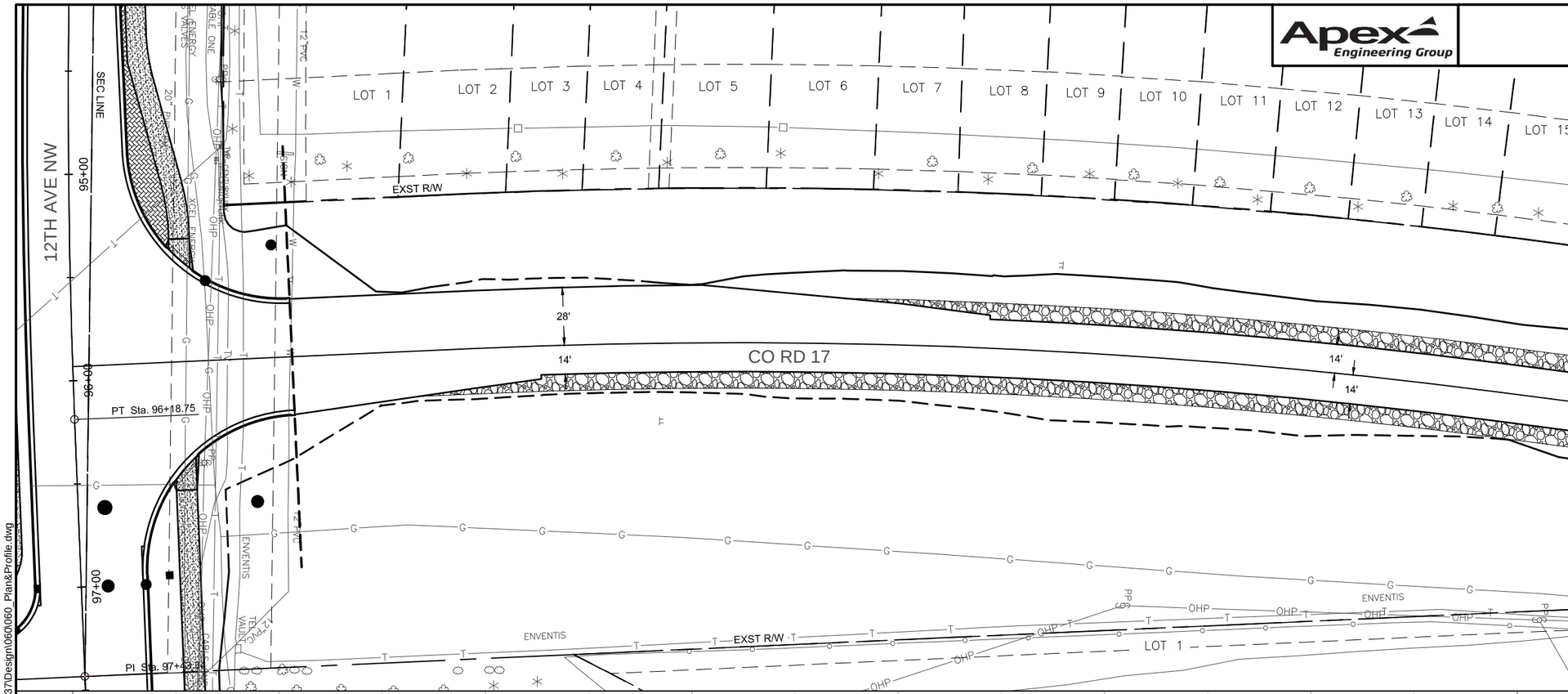
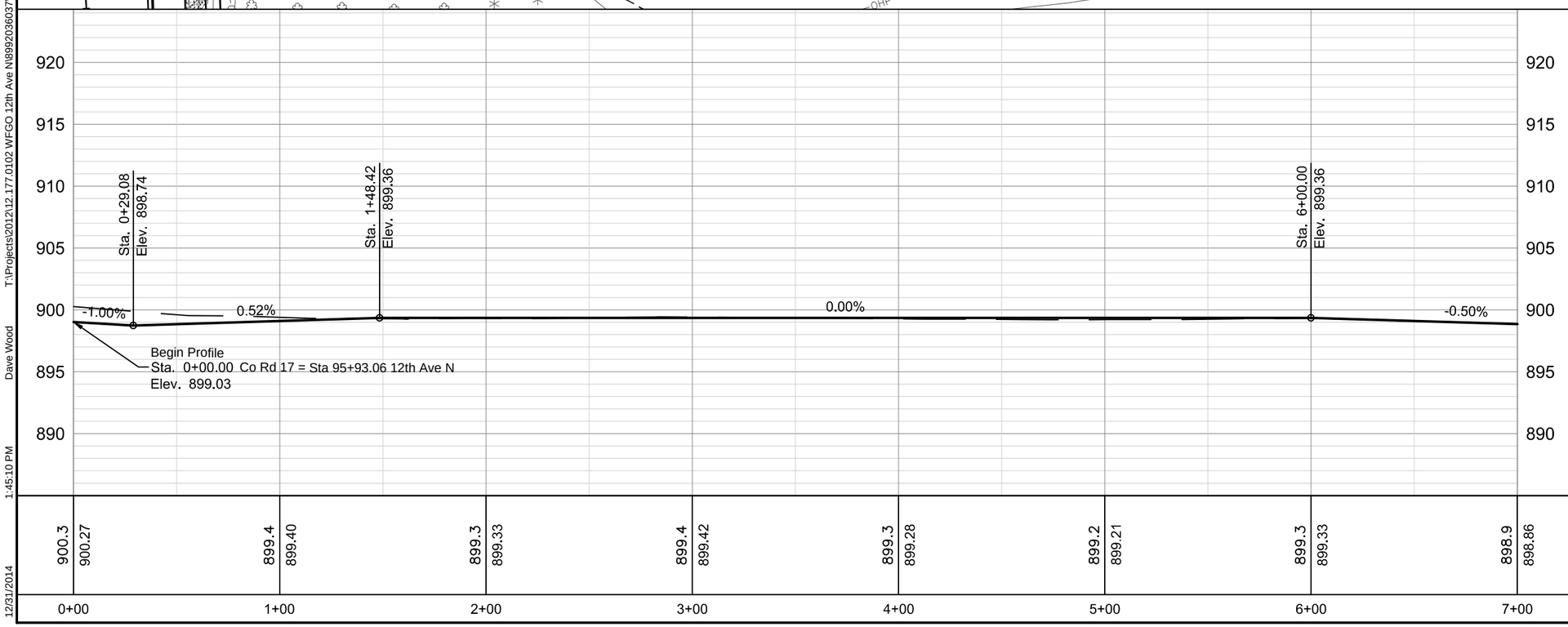
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	21

Apex Engineering Group





302 0100 SALVAGED BASE COURSE

Sta 1+06 to Sta 7+00	2462 TON
Sta 1+66 to Sta 7+00 RT - SHOULDER	138 TON
Sta 3+73 to Sta 7+00 LT - SHOULDER	240 TON

550 0312 10.5IN NON REINF CONCRETE PVMT CL AE - DOWELED

Sta 1+06 to Sta 7+00	2388 SY

Legend

- Salvaged Base Course
- Commercial Grade Hot Mix Asphalt
- Pigmented Imprinted Concrete
- Sidewalk Concrete
- Concrete Median Nose Paving
- Driveway Concrete 8IN

N

0 30 60

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12TH AVENUE NORTH RECONSTRUCTION

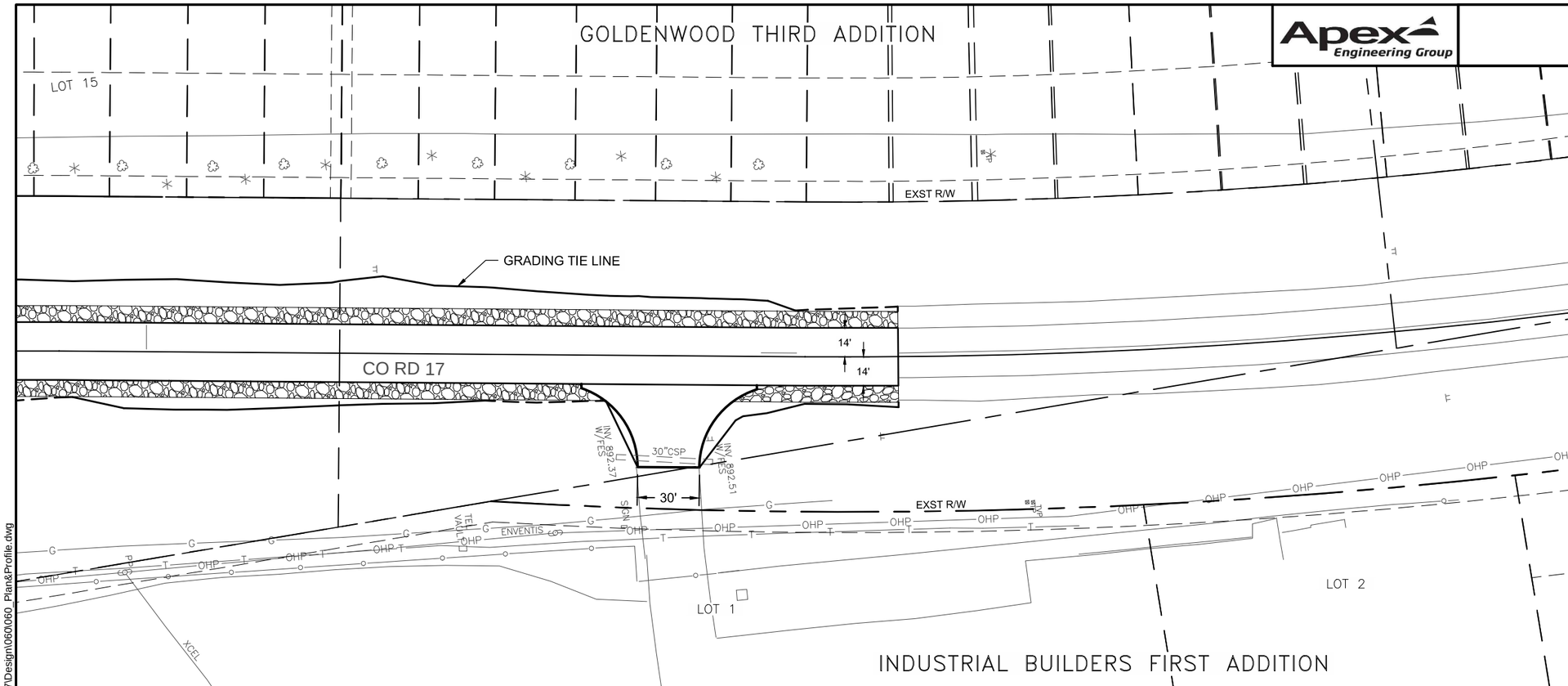
PLAN & PROFILE

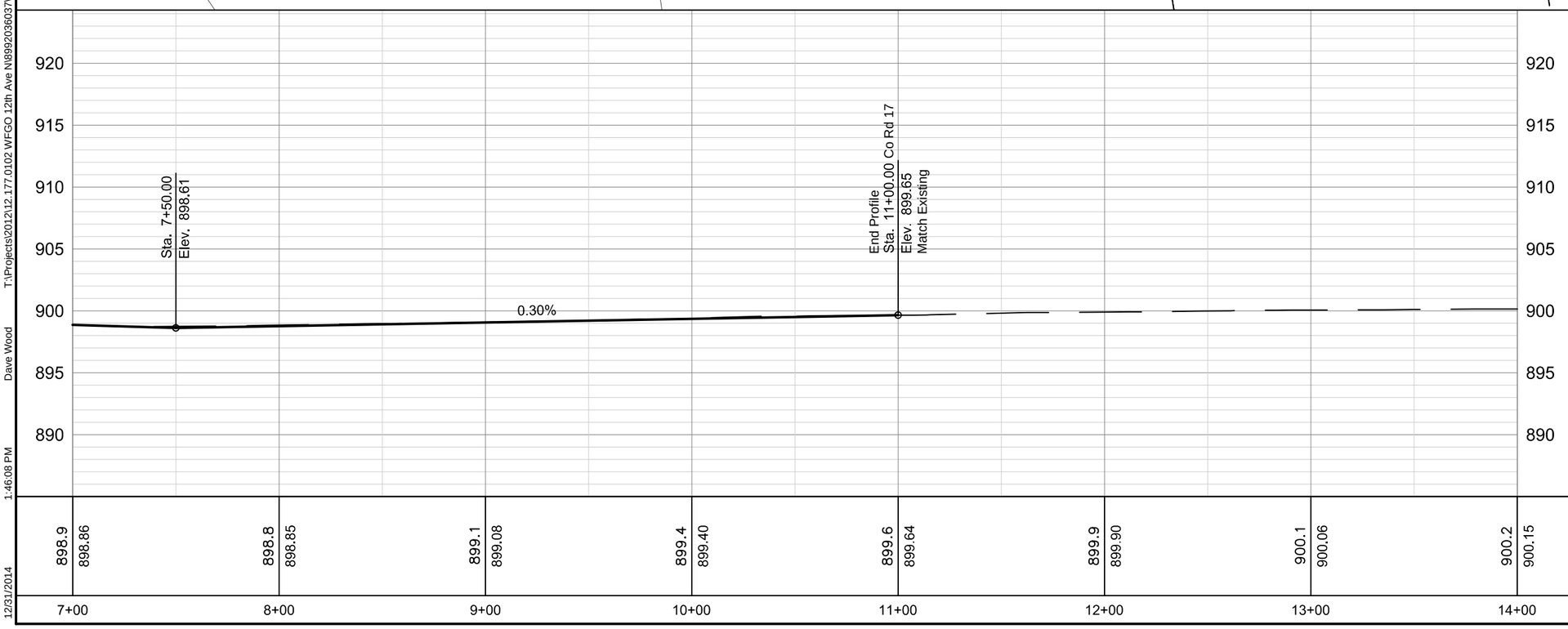
STA 0+00 - 7+00

T:\Projects\2012\12.177.0102 WFGO 12th Ave N\899203603\7\Design\060\060_Plan&Profile.dwg
Dave Wood
1:45:10 PM
12/31/2014

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	22

Apex Engineering Group





302 0100 SALVAGED BASE COURSE

Sta 7+00 to Sta 11+00	1517 TON
Sta 7+00 to Sta 11+00 RT - SHOULDER	195 TON
Sta 7+00 to Sta 11+00 LT - SHOULDER	195 TON

550 0312 10.5IN NON REINF CONCRETE PVMT CL AE - DOWELED

Sta 7+00 to Sta 11+00	1453 SY

Legend

- Salvaged Base Course
- Commercial Grade Hot Mix Asphalt
- Pigmented Imprinted Concrete
- Sidewalk Concrete
- Concrete Median Nose Paving
- Driveway Concrete 8IN

N

0 30 60

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12TH AVENUE NORTH RECONSTRUCTION

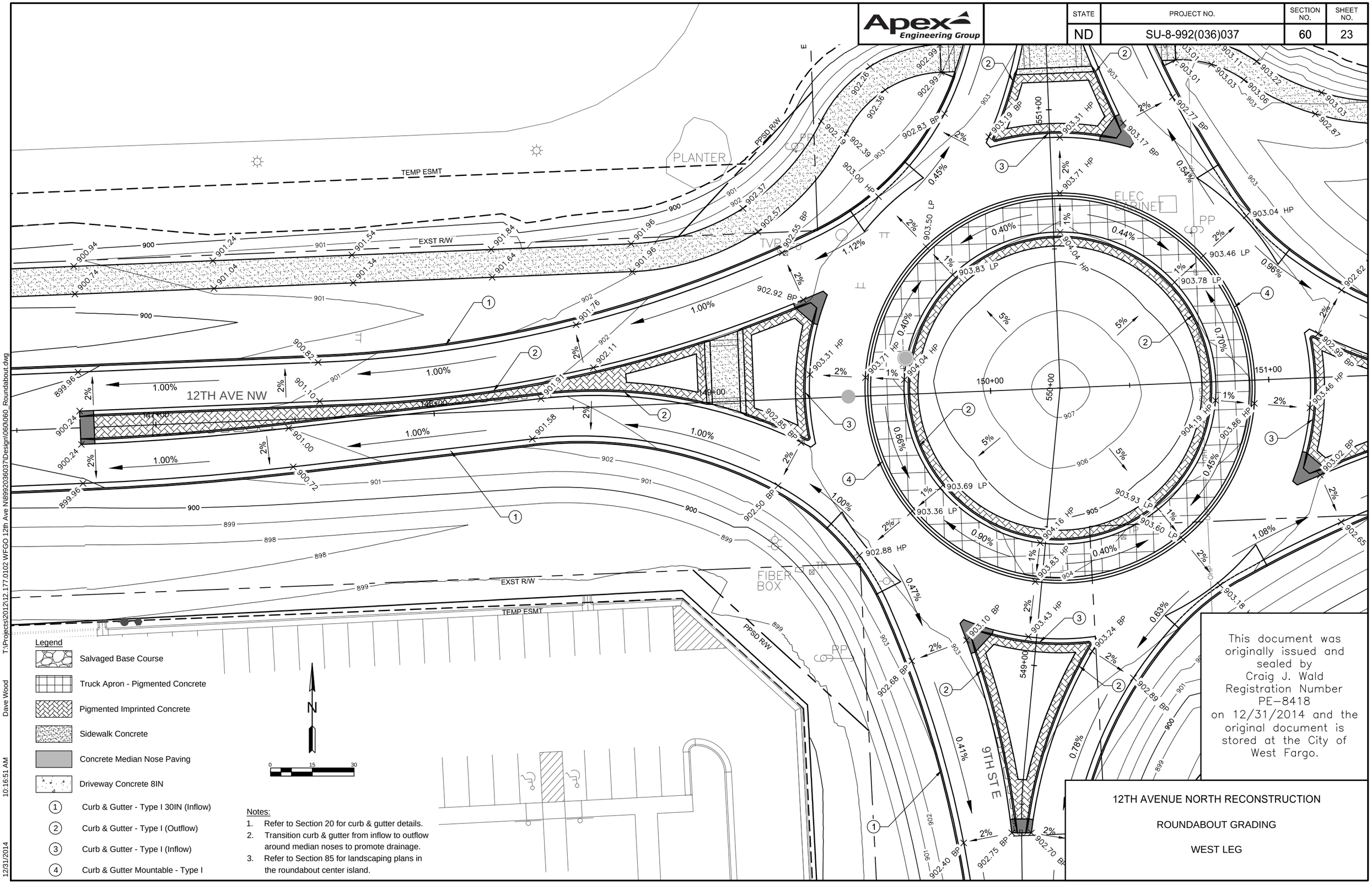
PLAN & PROFILE

STA 7+00 - 14+00

T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\060\060_Plan&Profile.dwg Dave Wood 1:46:08 PM 12/31/2014

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	23

Apex Engineering Group



Legend

- Salvaged Base Course
- Truck Apron - Pigmented Concrete
- Pigmented Imprinted Concrete
- Sidewalk Concrete
- Concrete Median Nose Paving
- Driveway Concrete 8IN
- (1) Curb & Gutter - Type I 30IN (Inflow)
- (2) Curb & Gutter - Type I (Outflow)
- (3) Curb & Gutter - Type I (Inflow)
- (4) Curb & Gutter Mountable - Type I

Notes:

1. Refer to Section 20 for curb & gutter details.
2. Transition curb & gutter from inflow to outflow around median noses to promote drainage.
3. Refer to Section 85 for landscaping plans in the roundabout center island.

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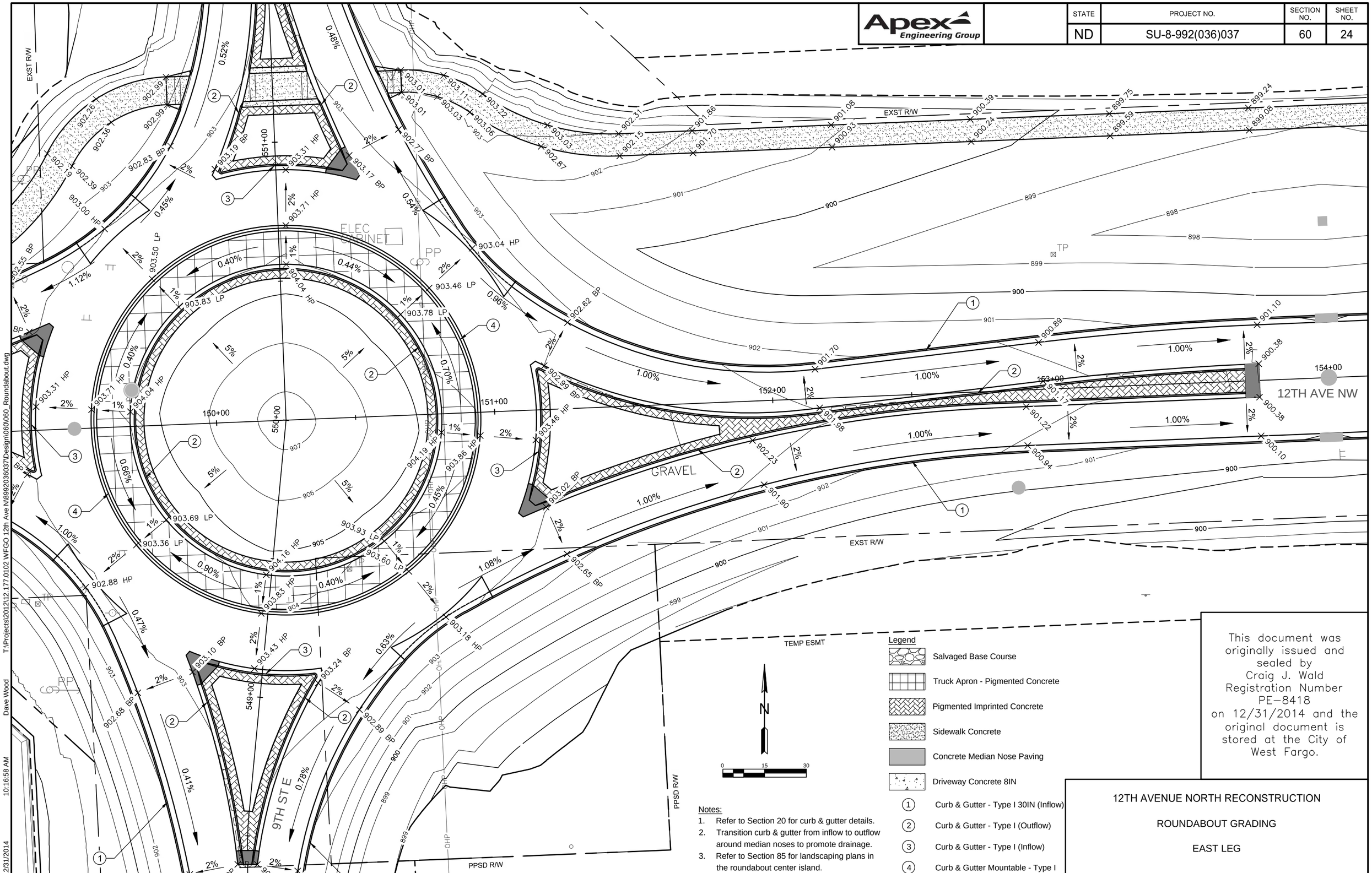
12TH AVENUE NORTH RECONSTRUCTION

ROUNDABOUT GRADING

WEST LEG

12/31/2014 10:16:51 AM Dave Wood T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\060\060_Roundabout.dwg

Apex Engineering Group	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-992(036)037	60	24



Legend

- Salvaged Base Course
- Truck Apron - Pigmented Concrete
- Pigmented Imprinted Concrete
- Sidewalk Concrete
- Concrete Median Nose Paving
- Driveway Concrete 8IN
- (1) Curb & Gutter - Type I 30IN (Inflow)
- (2) Curb & Gutter - Type I (Outflow)
- (3) Curb & Gutter - Type I (Inflow)
- (4) Curb & Gutter Mountable - Type I

Notes:

1. Refer to Section 20 for curb & gutter details.
2. Transition curb & gutter from inflow to outflow around median noses to promote drainage.
3. Refer to Section 85 for landscaping plans in the roundabout center island.

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12TH AVENUE NORTH RECONSTRUCTION

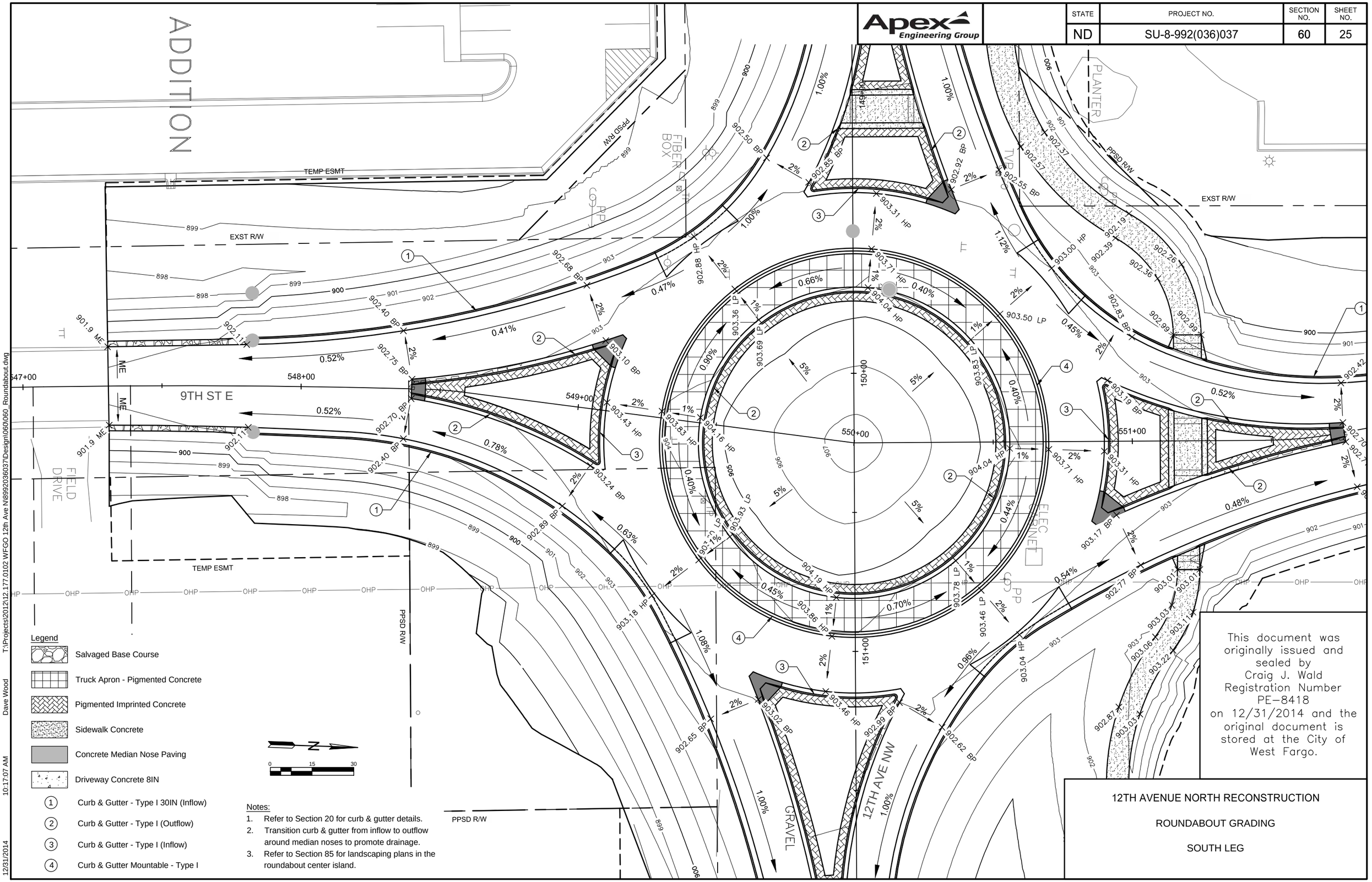
ROUNDABOUT GRADING

EAST LEG

T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992\036\037\Design\060\060_Roundabout.dwg Dave Wood 10:16:58 AM 12/31/2014

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	25

Apex Engineering Group



Notes:

1. Refer to Section 20 for curb & gutter details.
2. Transition curb & gutter from inflow to outflow around median noses to promote drainage.
3. Refer to Section 85 for landscaping plans in the roundabout center island.

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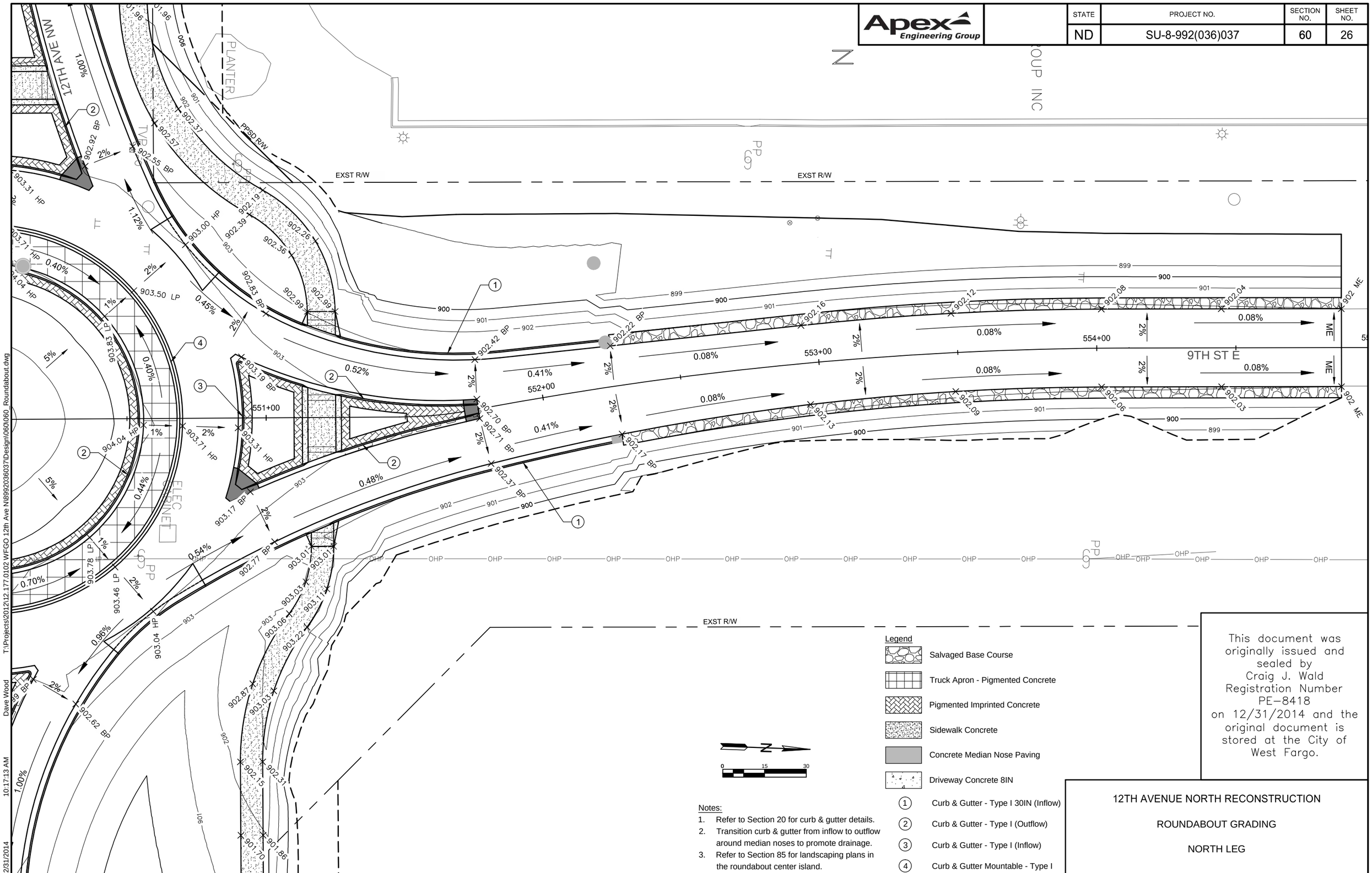
12TH AVENUE NORTH RECONSTRUCTION

ROUNDABOUT GRADING

SOUTH LEG

T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\060\060_Roundabout.dwg Dave Wood 10:17:07 AM 12/31/2014

Apex Engineering Group	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-992(036)037	60	26



Notes:

1. Refer to Section 20 for curb & gutter details.
2. Transition curb & gutter from inflow to outflow around median noses to promote drainage.
3. Refer to Section 85 for landscaping plans in the roundabout center island.

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12TH AVENUE NORTH RECONSTRUCTION

ROUNDABOUT GRADING

NORTH LEG

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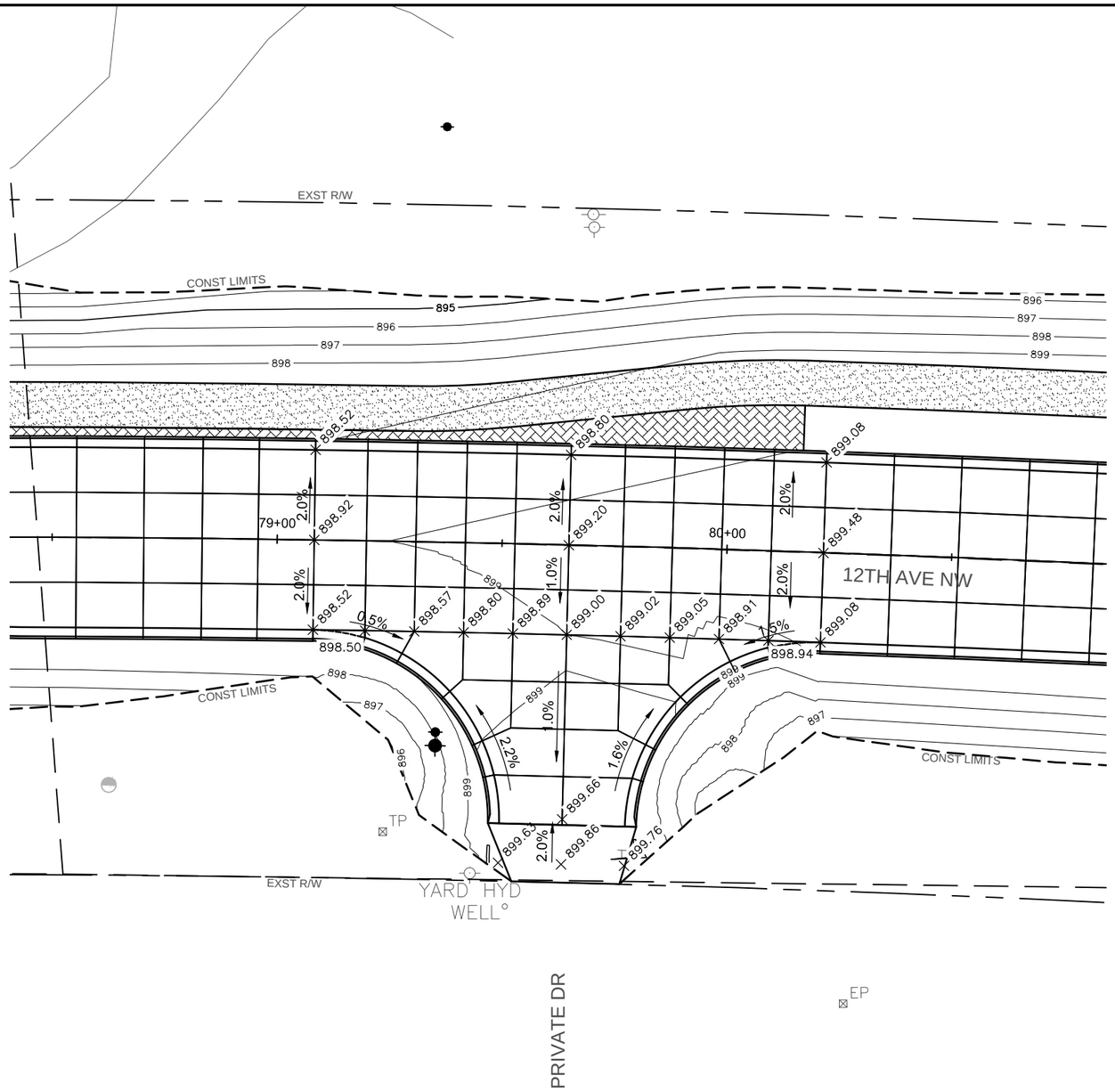
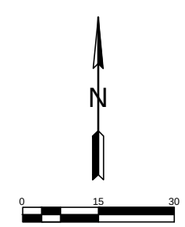
Dave Wood
10:17:13 AM
12/31/2014

Apex Engineering Group	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-992(036)037	60	27





Legend

- Concrete Median Nose Paving
- Pigmented Imprinted Concrete
- Sidewalk Concrete

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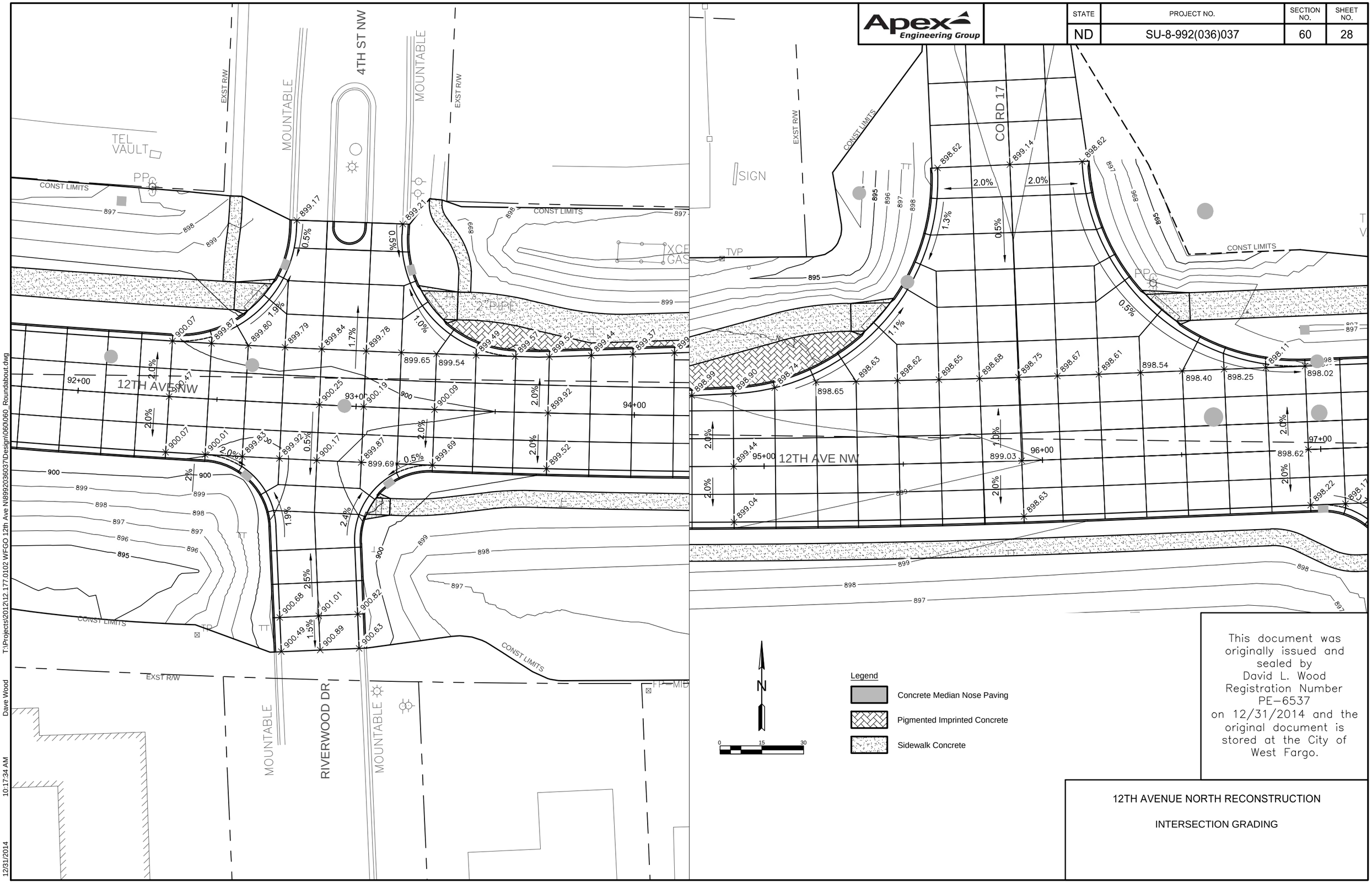
12TH AVENUE NORTH RECONSTRUCTION

INTERSECTION GRADING

7/21/2015 11:02:52 AM Mike Johnson T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\060\060_Roundabout.dwg

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	28

Apex Engineering Group



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12TH AVENUE NORTH RECONSTRUCTION

INTERSECTION GRADING

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Dave Wood
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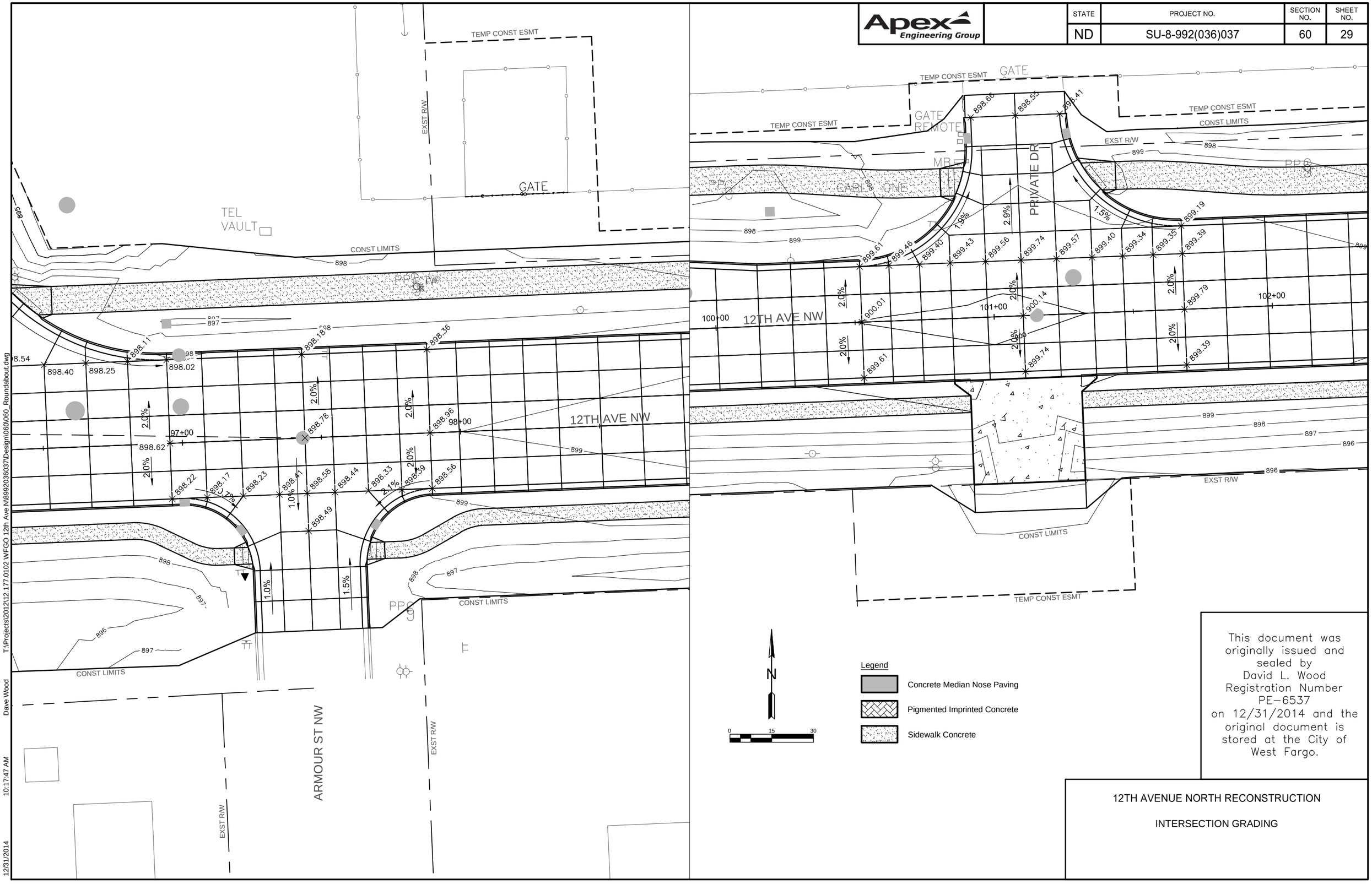
12/31/2014

Apex Engineering Group	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-992(036)037	60	29



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12TH AVENUE NORTH RECONSTRUCTION

INTERSECTION GRADING

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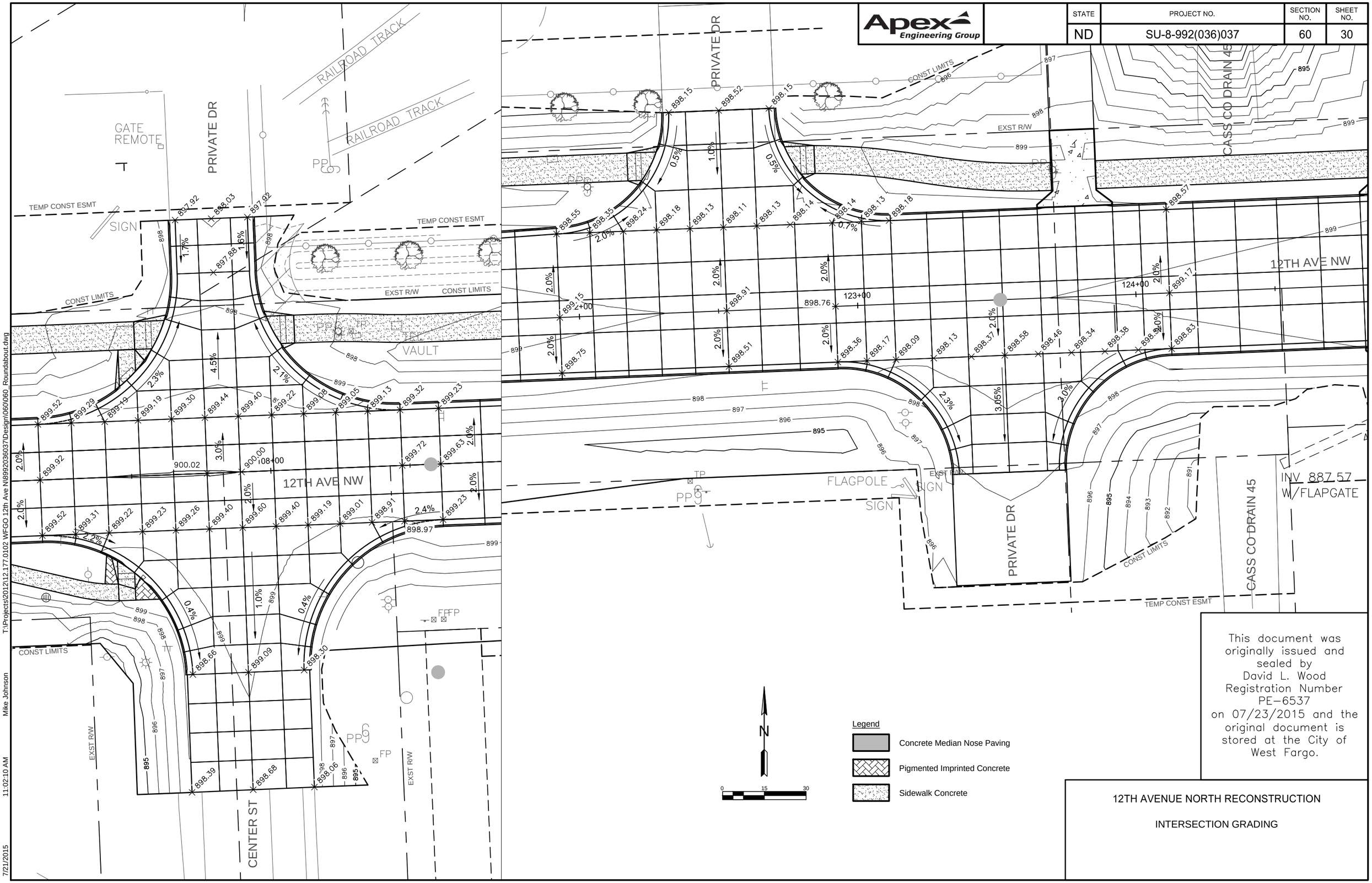
Apex Engineering Group	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-992(036)037	60	30



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12TH AVENUE NORTH RECONSTRUCTION

INTERSECTION GRADING

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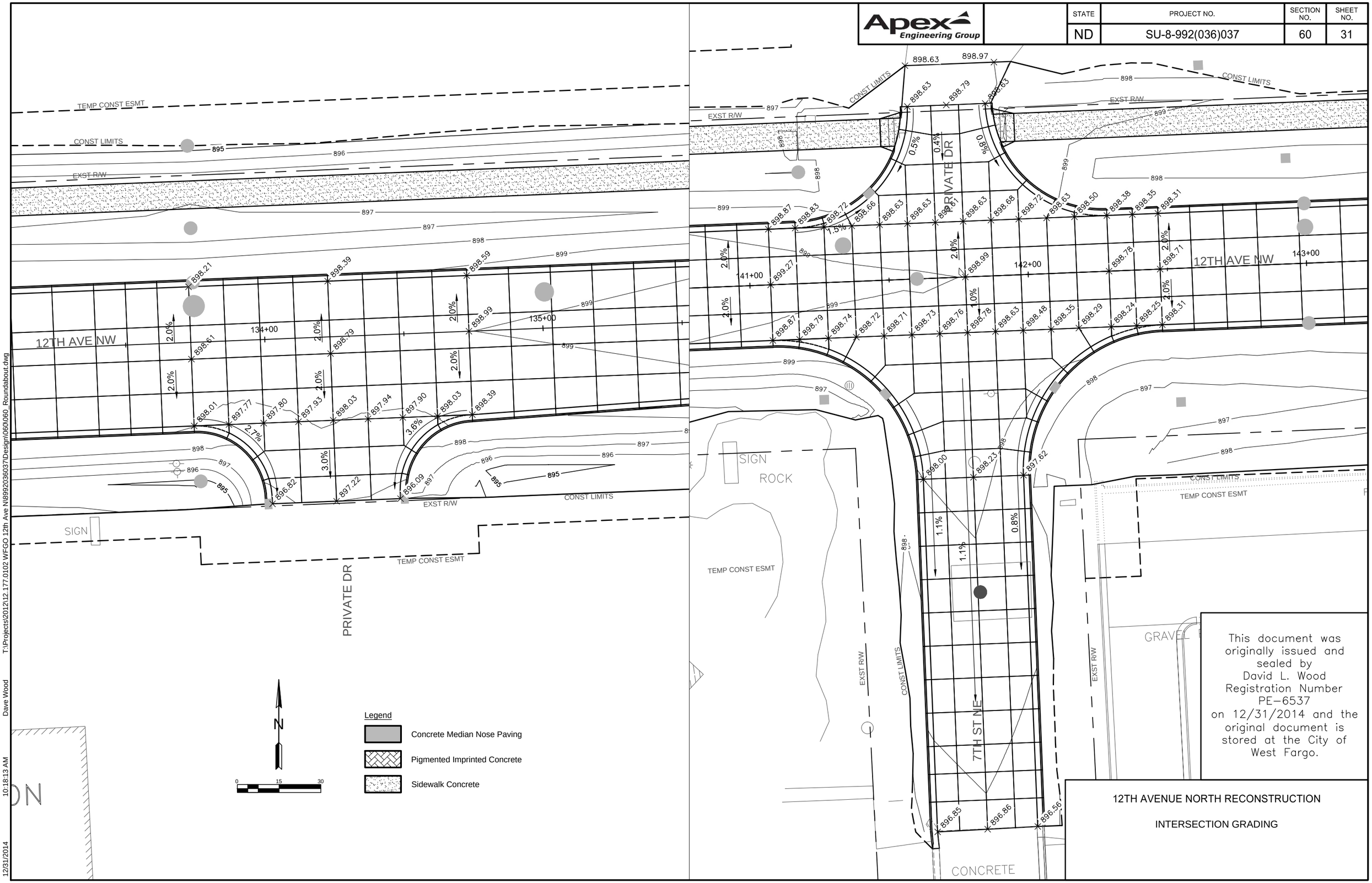
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	31

Apex Engineering Group



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12TH AVENUE NORTH RECONSTRUCTION

INTERSECTION GRADING

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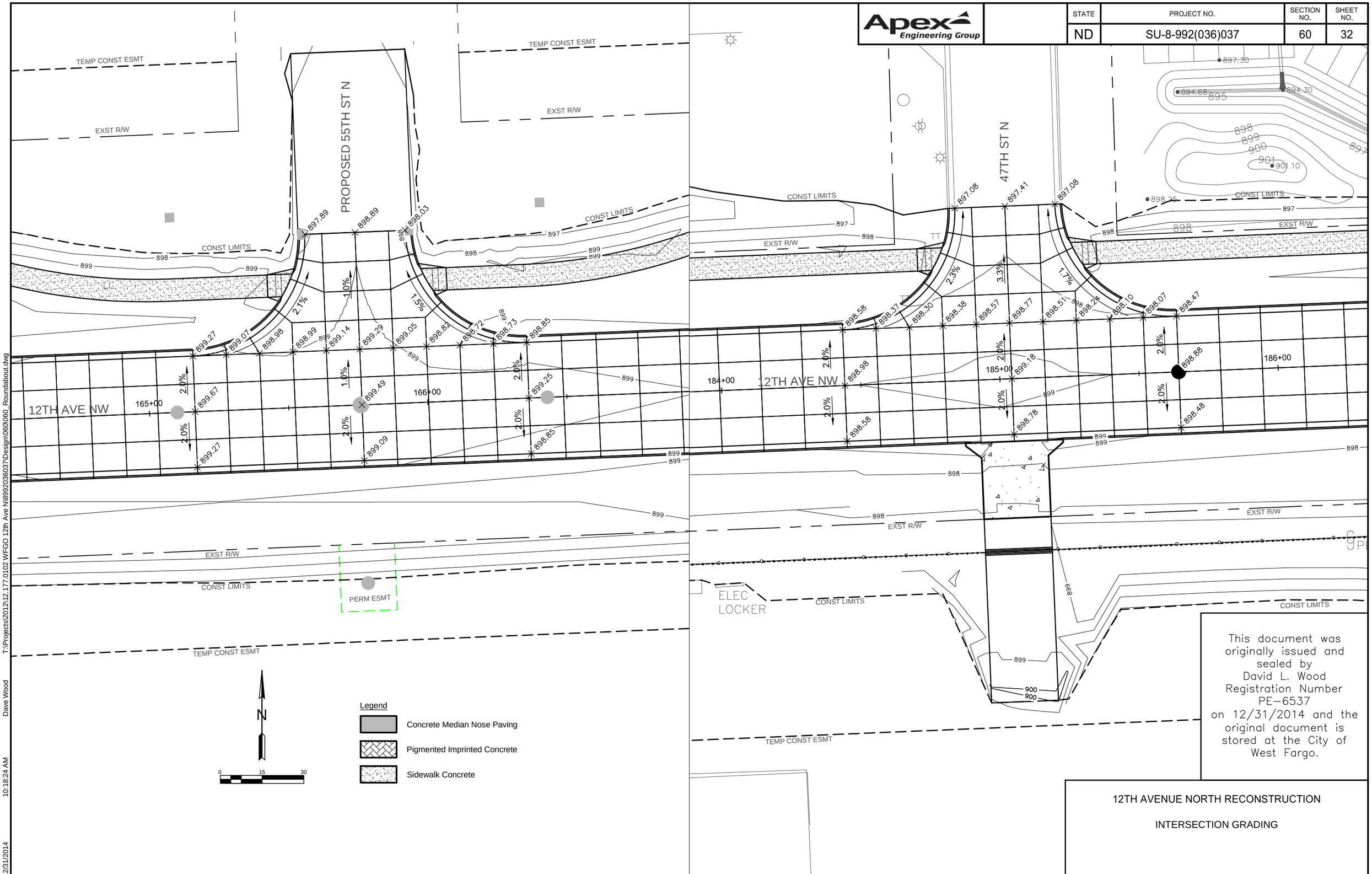
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-992(036)037	60	32

Apex Engineering Group



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12TH AVENUE NORTH RECONSTRUCTION

INTERSECTION GRADING

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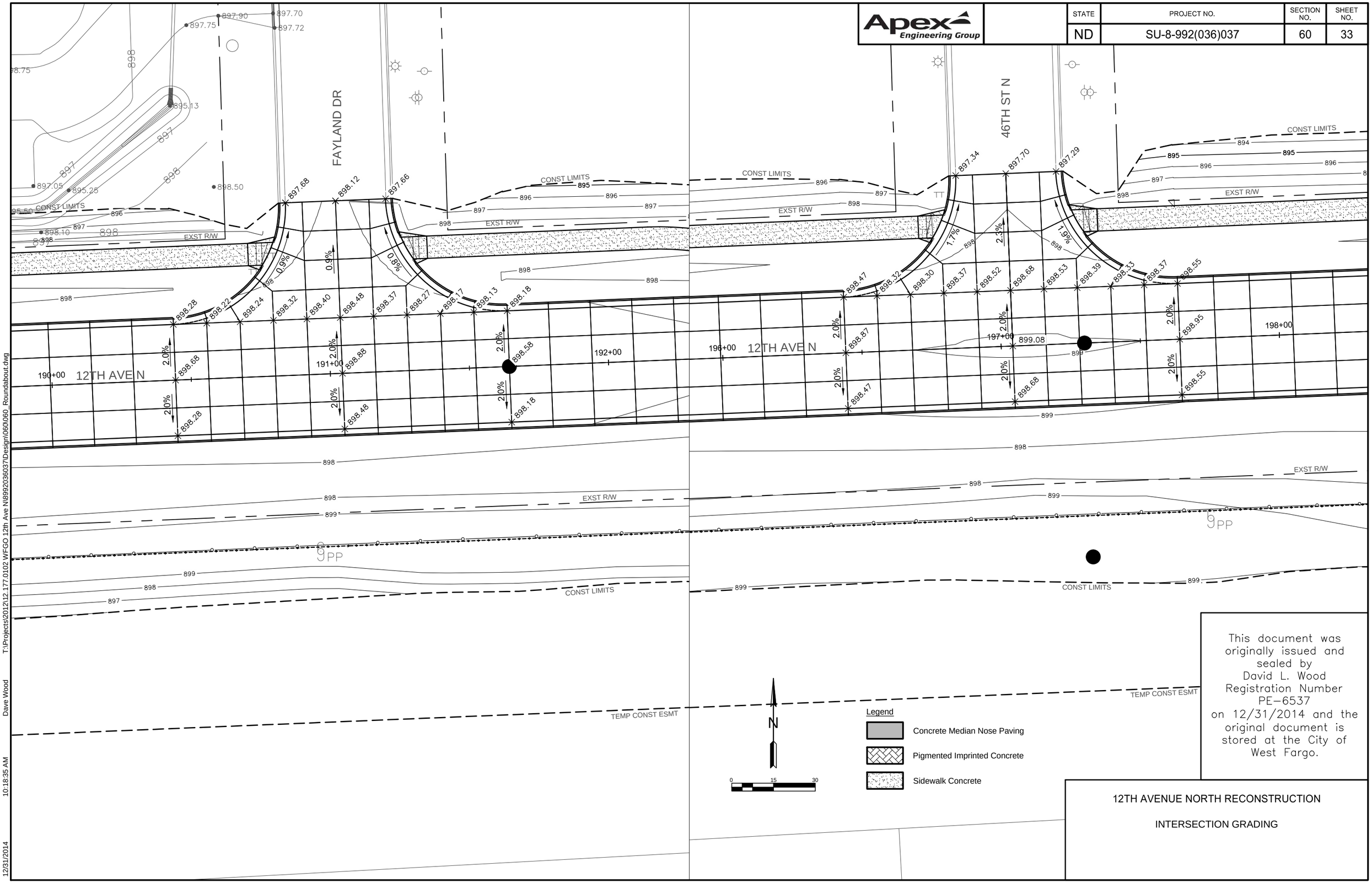
Apex Engineering Group	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-992(036)037	60	33



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12TH AVENUE NORTH RECONSTRUCTION

INTERSECTION GRADING

12/31/2014 10:18:35 AM Dave Wood T:\Projects\2012\12.177.0102 WFGO 12th Ave N\8992036037\Design\060\060_Roundabout.dwg