

State of Michigan
Department of Environmental Quality

Water Resources Division
Transportation and Flood Hazard Unit
P.O. Box 30458
Lansing, MI 48909
517-284-5509

File Number 15-63-0045-P

Date: March 5, 2015

PUBLIC NOTICE

The City of Novi, 26300 Lee Begole Drive, Novi, Michigan 48375, has applied to this office for a permit under authority of Part 301, Inland Lakes and Streams, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. The applicant proposes to extend the existing Crescent Boulevard via a 4-lane boulevard from Novi Road to Grand River Avenue and construct a new Industrial Spur Road from Crescent Boulevard to an existing industrial access drive. The project includes the following:

- 1) Install a new 96 feet long, 24 feet span, 8 feet rise concrete arch culvert at the crossing of the Walled Lake Branch Rouge River. Place 149 cubic yards of riprap.
- 2) Place 3935 cubic yards of fill in 0.49 acres of wetland. Mitigation is proposed at a 2 to 1 ratio (0.98 acres) at a site near 13 Mile Road and West Park Drive.
- 3) Remove the existing 73 feet long, 7 feet diameter concrete culvert at the Flint Street crossing of the Walled Lake Branch Rouge River and install a 66 feet long, 14 feet span, 6 feet rise concrete box culvert. Place 37 cubic yards of riprap.

A total of 7,310 cubic yards of fill will be placed in the 100-year floodplain.

The project is located in T1N, R8E, Sections 15 and 22, City of Novi, Oakland County, Michigan.

THIS NOTICE IS NOT A PERMIT

The proposed project may also be regulated by one or more additional parts of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA) that are administered by the Water Resources Division (WRD). The requirements of all applicable parts are considered in determining if it is in the public interest to issue a permit.

When a permit application is received requesting authorization to work in or over the inland waters of the State of Michigan, pursuant to Part 301, Inland Lakes and Streams, of the NREPA, the NREPA provides that the department submit copies for review to the department of public health, the city, village or township, and the county where the project is to be located, the local soil conservation district, any local watershed council organized under Part 311, Local River Management, and the local port commission. Additional notification is provided to certain persons as required by statute or determined by the department.

Those persons wanting to make comments on the proposed project shall furnish this office with their written comments no later than 20 days from the date of this notice. Written comments will be made part of the record and should reference the above file number. Objections must be factual, specific, and fully describe the reasons upon which any objection is founded. Unless a written request is filed with the department within the 20-day public comment period, the department may make a decision on the application without a public hearing. The determination as to whether a permit will be issued or a public hearing held will be based on evaluation of all relevant factors defined in Sections 30106 and 30311, or permit criteria defined by other appropriate parts of the NREPA. These Sections address the effect of the proposed work on the public trust or interest including navigation, fish, wildlife, and water quality among other criteria. Public comments received will also be considered.

The entire copy of the public notice package may be viewed at the Michigan Department of Environmental Quality (MDEQ) (address listed on the top of this public notice), or on-line at <http://www.deq.state.mi.us/lwmpnh/>. To access the public notice package on-line, enter the file number on the left panel and view by clicking on the icon next to the public notice date. Comments may be sent electronically by clicking on the icon next to the comment period date. A hard copy of the public notice may be requested by calling the above number or by e-mailing deq-wrd-jointpermit@michigan.gov.

cc: Brian Coburn, City of Novi, applicant
Tim Payne, MDNR, Wildlife
Oakland County Clerk
Oakland County Drain Commissioner
Hae-Jin Yoon, MDEQ
Sue Tepatti, MDEQ
Adell Bros Children Trust
General Filters
Hasmig, LLC
Joseph Micallef
Loiselle Properties, LLC
Alonco Novi, LLC
George Keros
City Center Plaza Limited Partners
Local Postmaster

Jim Francis, MDNR, Fisheries
Oakland County Health Department
City of Novi Clerk
Oakland Conservation District
John Skubinna, MDEQ
Phillip Vogelsang, URS Great Lakes
Comau Pico, Inc.
Eugene & Regina Neugebohr
Novi Land Company, LLC
Wend-Tree investments, LLC
Commercial Net Lease Reality
GL Investments
BK Novi Project, LLC
Hunter Development



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AGENCY USE	Previous USACE File Number	Date Received	DEQ File Number 15-63-0045-P	
	USACE File Number		Fee received \$	
WATER RESOURCES DIVISION				
Validate that all parts of this checklist are submitted with the application package. Fill out application and additional pages as needed. <input checked="" type="checkbox"/> All items in Sections 1 through 9 are completed. <input checked="" type="checkbox"/> Project-specific Sections 10 through 20 are completed. <input checked="" type="checkbox"/> Dimensions, volumes, and calculations are provided for all impact areas. <input checked="" type="checkbox"/> All information contained in the headings for the appropriate Sections (1-20) are addressed, and identified attachments (*) are included. <input checked="" type="checkbox"/> Map, site plan(s), cross sections; one set must be black and white on 8 1/2 by 11 inch paper; photographs. <input checked="" type="checkbox"/> Application fee is attached. <i>No Fee for transportation project.</i>				
1 Project Location Information For Latitude, Longitude, and TRS info anywhere in Michigan see www.mcqi.state.mi.us/wetlands/				
Project Address (road, if no street address) <i>43726 Grand River</i>		Zip Code <i>48375</i>	Municipality (Township/Village/City) <i>City of Novi</i>	County <i>Oakland</i>
Property Tax Identification Number(s) <i>50-22-15-476-024</i>		Latitude <i>42.483036N</i>		Township/Range/Section (TRS) <i>T 1N or S; R 8E or W;</i>
Subdivision/Plat and Lot Number		Longitude <i>-83.478820W</i>		Sec <i>15 & 22</i> OR Private Claim #
2 Applicant and Agent Information				
Owner/Applicant (Individual or corporate name) <i>City of Novi - Brian Coburn</i>		Agent/Contractor (firm name and contact person) <i>URS Great Lakes - Phil Vogelsang</i>		
Mailing Address <i>26300 Lee Begole Drive</i>		Mailing Address <i>3950 Sparks Drive SE</i>		
City <i>Novi</i>	State <i>MI</i>	Zip Code <i>48375</i>	City <i>Grand Rapids</i>	State <i>MI</i> Zip Code <i>49546</i>
Contact Phone Number <i>248-347-0454</i>	Fax <i>248-735-5683</i>	Contact Phone Number <i>616.574.8479</i>	Fax <i>616.574.8542</i>	
Email <i>bcoburn@cityofnovi.org</i>		E-mail <i>phillip.vogelsang@urs.com</i>		
<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes Is the applicant the sole owner of all property on which this project is to be constructed and all property involved or impacted by this project? * If no, attach letter(s) of authorization from all property owners including the owner of the disposal site.				
Property Owner's Name (if different from applicant)		Mailing Address		
Contact Phone Number		City	State	Zip Code
3 Project Description				
Project Name <i>Ring Road</i>		<i>Refer to expired permit 09-63-0219-P</i> Preapplication File Number - - -P		
Name of Water body <i>Walled Lake Branch of the Middle Rouge</i>		Date project staked/flagged <i>2/27/09</i>		
The proposed project is on, within, or involves (check all that apply) <input type="checkbox"/> an Inland lake (5 acres or more) <input type="checkbox"/> a pond (less than 5 acres) <input checked="" type="checkbox"/> a stream, river, ditch or drain <input type="checkbox"/> a legally established County Drain Date Drain was established <input type="checkbox"/> a channel/canal <input type="checkbox"/> 500 feet of an existing water body				Project Use <input type="checkbox"/> private <input type="checkbox"/> commercial <input checked="" type="checkbox"/> public/government <input type="checkbox"/> project is receiving federal/state transportation funds <input type="checkbox"/> Wetland Restoration <input type="checkbox"/> other
Indicate the type of permit being applied for: <input type="checkbox"/> General Permit <input type="checkbox"/> Minor Project <input type="checkbox"/> Individual (All other projects.) * See Appendix C.				
Written Summary of All Proposed Activities <i>The City of Novi is proposing construction of a new road from the intersection of Novi Road and Crescent Blvd, across the Walled Lake Branch of the Middle Rouge to Grand River Avenue. An additional Industrial Spur is proposed, north of the General Filter plant, to connect the new section of Crescent Blvd with an existing industrial access drive. The City also proposes the replacement of a single culvert on Flint Street and an installation of a new culvert on the proposed section of Crescent Blvd. See the Project Location Map and Site Plan for more details.</i>				
Construction Sequence and Methods <i>Install erosion control measures, clear construction area of trees and brush, construct new culvert on Crescent Blvd. remove and replace culvert under Flint Street. Place rip rap over fabric at ends of culverts. Backfill to grade around culverts. Finish road construction. Complete turf restoration and remove temporary erosion control measures. Place wetland plantings in off-site wetlands bank.</i>				



4 Project Purpose, Use and Alternatives <i>Attach additional sheets as necessary.</i>					
Describe the purpose of the project and its intended use; include any new development or expansion of an existing land use. <i>See Attached Addendum</i>					
Describe the alternatives considered to avoid or minimize resource impacts. Include factors such as, but not limited to, alternative locations, project layout and design, and construction technologies. For utility crossings include alternative routes and construction methods. <i>See Attached Addendum</i>					
5 Locating Your Project Site <i>Attach a legible black and white map with a North arrow.</i>					
Names of roads of closest intersection <i>Grand River Avenue and Novi Road</i>					
Directions from main intersection to the project site, with distances from the best and nearest visible landmark and water body <i>Head North on Novi Road. Turn Left onto Crescent Blvd. Project begins (North end) at the end of Crescent Blvd and ends at Grand River Ave.</i>					
Description of buildings on the site (color; 1 or 2 story, other) <i>None</i>			Description of adjacent landmarks or buildings (address; color; etc) <i>Site starts at dead end of Crescent Blvd and ends near General Filter</i>		
How can your site be identified if there is no visible address? <i>The driveway and parking lot of the General Filters plant is just west of the project.</i>					
6 Easements and Other Permits					
<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes Is there a conservation easement or other easement, deed restriction, lease, or other encumbrance upon the property? ⇒ If yes, attach a copy. Provide copies of court orders and legal lake levels if applicable.					
List all other federal, interstate, state, or local agency authorizations including required assurances for Critical Dune Area projects.					
Agency	Type of Approval	Number	Date Applied	Date approved /denied	Reason for denial
City of Novi	SESC		Pending		
MDEQ	NPDES		Pending		
7 Compliance					
If a permit is issued, when will the activity begin? (M/D/Y) <i>06/01/2015</i>			Proposed completion date (M/D/Y) <i>10/01/2016</i>		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes Has any construction activity commenced or been completed in a regulated area? ⇒ If Yes, identify the portion(s) underway or completed on drawings or attach project specifications and give completion date(s).					
<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes Were the regulated activities conducted under a DEQ and/or USACE permit? ⇒ If Yes, list the permit numbers					
<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes Are you aware of any unresolved violations of environmental law or litigation involving the property? ⇒ If Yes, attach explanation.					
8 Adjoining Property Owners <i>Provide current mailing addresses. Attach additional sheets/labels for long lists.</i>					
<input type="checkbox"/> Established Lake Board <input type="checkbox"/> Lake Association	Contact Person	Mailing Address	City	State and Zip Code	
List all adjoining property owners. If you own the adjoining lot, provide the requested information for the first adjoining parcel that is not owned by you.					
Property Owner's Name	Mailing Address		City	State and Zip Code	
<i>Please see attached Map and Table for Adjacent Land Owners</i>					

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**Applicant's Certification***Read carefully before signing.*

I am applying for a permit(s) to authorize the activities described herein. I certify that I am familiar with the information contained in this application; that it is true and accurate; and, to the best of my knowledge, that it is in compliance with the State Coastal Zone Management Program. I understand that there are penalties for submitting false information and that any permit issued pursuant to this application may be revoked if information on this application is untrue. I certify that I have the authority to undertake the activities proposed in this application. By signing this application, I agree to allow representatives of the DEQ, USACE, and/or their agents or contractors to enter upon said property in order to inspect the proposed activity site before and during construction and after the completion of the project. I understand that I must obtain all other necessary local, county, state, or federal permits and that the granting of other permits by local, county, state, or federal agencies does not release me from the requirements of obtaining the permit requested herein before commencing the activity. I understand that the payment of the application fee does not guarantee the issuance of a permit.

- ☐ Property Owner
☐ Agent/Contractor
☒ Corp. or Public Agency / Title

Printed Name
Brian Coburn
Engineering Manager

Signature

Date

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**10 Projects Impacting Inland Lakes, Streams, Great Lakes, Wetlands or Floodplains**

- Complete only those sections A through M applicable to your project.
- If your project impacts wetlands also complete Section 12. If your project impacts regulated floodplains also complete Section 13.
- To calculate volume in cubic yards (cu yd), multiply the average length in feet (ft) times the average width (ft) times the average depth (ft) and divide by 27. Example: (25 ft long x 10 ft wide x 2 feet deep) / 27 = 18.5 cubic yards
- Some projects on the Great Lakes require an application for conveyance prior to Joint Permit Application completeness.
 - ⇒ Provide a black and white overall site plan, with cross-section and profile drawings. Show existing lakes, streams, wetlands, and other water features; existing structures; and the location of all proposed structures, land change activities and soil erosion and sedimentation control measures. Review Appendix B and EZ Guides for aid in providing complete site-specific drawings.
 - ⇒ Provide tables for multiple impact areas or multiple activities such as multiple fill areas or multiple culverts. Include your calculations.

Water Level Elevation

On inland waters ☐ NGVD 29 ☒ NAVD 88 ☐ other Observed water elevation (ft) 902.9 date of observation (M/D/Y) 02/27/09
 On a Great Lake ☐ IGLD 85 ☐ surveyed ☐ converted from observed still water elevation.

☒ **A. PROJECTS REQUIRING FILL** (See All Sample Drawings)

- ⇒ Attach a site plan and cross-section views to scale showing maximum and average fill dimensions with calculations.
- ⇒ For multiple impact areas on a site provide a table with location, dimensions and volumes for each fill area.

Purpose ☐ bioengineered shore protection ☐ boat ramp ☐ boat well ☒ bridge or culvert ☐ crib dock
☒ riprap ☐ seawall ☐ swim area ☐ other

Dimensions of fill (ft) Length 810 Width 50 avg Maximum Depth 8	Total volume (cubic yards) 7310	Volume below OHWM (cubic yards) 0.0
Maximum water depth in fill area (ft) 0.0	Area filled (sq ft) 40,500	Will filter fabric be used under proposed fill? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, type)

Fill will extend 0.0 feet into the water from the shoreline and upland 50 feet out of the water.

Type of clean fill ☐ peastone % ☒ sand 100% ☐ gravel % ☐ other

Source of clean fill ☒ commercial ☐ on-site ☐ other
 ⇒ If on-site, show location on site plan.
 ⇒ If other, attach description of location.

☐ **B. PROJECTS REQUIRING DREDGING OR EXCAVATION** (See Sample Drawings)

- Refer to www.mi.gov/jointpermit for spoils disposal and authorization requirements.
- ⇒ Attach a site plan and cross-section views to scale showing maximum and average dredge or excavation dimensions with calculations.
- ⇒ For multiple impact areas on a site provide a table with location, dimensions and volumes for each dredge/excavation area.

Purpose ☐ boat ramp ☐ boat well ☐ bridge or culvert ☐ maintenance dredge
☐ navigation ☐ pond/basin ☐ other

Dimensions (ft) Length Width Maximum Depth	Total volume (cu yds)	Volume below OHWM (cu yds)
Has this same area been previously dredged?	<input type="checkbox"/> No <input type="checkbox"/> Yes	If Yes, provide date and permit number:
Will the previously dredged area be enlarged?	<input type="checkbox"/> No <input type="checkbox"/> Yes	If Yes, when and how much?
Is long-term maintenance dredging planned?	<input type="checkbox"/> No <input type="checkbox"/> Yes	If Yes, how often?

Dredge or Excavation Method ☐ Hydraulic ☐ Mechanical ☐ other

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Spoils Disposal
 Dredged or excavated spoils will be placed ☐ on-site ☐ landfill ☐ USACE confined disposal facility ☐ other upland off-site
 For disposal, provide a ⇒ Detailed spoils disposal area location map and site plan with property lines.
 ⇒ Letter of authorization from property owner of spoils disposal site, if disposed off-site.
 For volumes less than 5,000 cu yards, has proposed dredge material been tested for contaminants within the past 10 years?
☐ No ☐ Yes ⇒ If Yes, provide test results with a map of sampling locations.

☒ **C. PROJECTS REQUIRING RIPRAP** (See Sample Drawings 2, 3, 8, 12, 14, 22, and 23)

Riprap water ward of the ordinary high water mark: dimensions (ft) length 150 width 14 depth 1	Volume (cu yd) 78
Riprap landward of the ordinary high water mark: dimensions (ft) length 150 width 19.5 depth 1	Volume (cu yd) 108
Type and size of riprap (inches) <input type="checkbox"/> field stone <input checked="" type="checkbox"/> angular rock <input type="checkbox"/> other	Will filter fabric or pea stone be used under proposed riprap? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes, Type MDOT

**12 Activities That May Impact Wetlands** (See Sample Drawings 8 & 9). Complete other Sections as applicable.

- Locate your site and wetland information with the DEQ Wetlands Map Viewer at www.mcqi.state.mi.us/wetlands/
- For information on the DEQ's Wetland Identification Program (WIP) visit www.mi.gov/wetlands.
 - ⇒ Provide a detailed site plan with labeled property lines, upland and wetland areas, and dimensions and volumes of wetland impacts.
 - ⇒ Complete the wetland dredge and wetland fill dimension information below for each impacted wetland area
 - ⇒ Attach tables for multiple impact areas or activities.
 - ⇒ Attach at least one cross-section for each wetland dredge and/or fill area; show wetland and upland boundaries on the cross-section.

Has the DEQ conducted a wetland assessment for this parcel?		<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	⇒ If Yes, provide a copy or WIP number:	
Has a professional wetland delineation been conducted for this parcel?		<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	⇒ If Yes, provide a copy with data sheets	
Is there a recorded DEQ easement on the property?		<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	⇒ If Yes, provide the easement number	
Did the applicant purchase the property before October 1, 1980?		<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	⇒ If Yes, provide documentation.	
Is any grading or mechanized land clearing proposed?		<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	⇒ If Yes, label the locations on the site plan.	
Has any of the proposed grading or mechanized land clearing been completed?		<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	⇒ If Yes, label the locations on the site plan	
Proposed Activity <input type="checkbox"/> boardwalk or deck (Section 10I) <input checked="" type="checkbox"/> bridges and culverts (Section 14) <input type="checkbox"/> designated environmental area <input type="checkbox"/> dewatering <input type="checkbox"/> draining surface water <input checked="" type="checkbox"/> driveway / road <input type="checkbox"/> fences (Section 10L) <input type="checkbox"/> fill or dredge <input type="checkbox"/> restoration <input type="checkbox"/> septic system <input type="checkbox"/> stormwater discharge (Section 10J) <input type="checkbox"/> other				
FILL	Dimensions maximum length (ft) 170 maximum width (ft) 125	Area <input checked="" type="checkbox"/> acres <input type="checkbox"/> sq ft 0.49	Average depth (ft) 5	Volume (cu yd) 3935
	Dimensions maximum length (ft) maximum width (ft)	Area <input type="checkbox"/> acres <input type="checkbox"/> sq ft	Average depth (ft)	Volume (cu yd)
DREDGE	Dimensions maximum length (ft) maximum width (ft)	Area <input type="checkbox"/> acres <input type="checkbox"/> sq ft	Average depth (ft)	Volume (cu yd)
Spoils Disposal	Dredged or excavated spoils will be placed <input type="checkbox"/> on-site <input type="checkbox"/> landfill <input type="checkbox"/> USACE confined disposal facility <input type="checkbox"/> other upland off-site			
	For disposal, provide a ⇒ Detailed spoils disposal area location map and site plan with property lines. ⇒ Letter of authorization from property owner of spoils disposal site, if disposed off-site.			
Septic System	The proposed project will be serviced by: <input checked="" type="checkbox"/> public sewer <input type="checkbox"/> private septic system ⇒ Show system on plans.		If a private septic system is proposed, has an application for a permit been made to the County Health Department? <input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, has a permit been issued? <input type="checkbox"/> No <input type="checkbox"/> Yes ⇒ Provide a copy of the permit.	
Describe the wetland impacts, the proposed use or development, and the alternatives considered: <i>See addendum</i>				
Does the project impact more than 1/3 acre of wetland? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes ⇒ If Yes, submit a Mitigation Plan with the type and amount of mitigation proposed. For more information go to www.mi.gov/wetlands				
Describe how impacts to waters of the United States will be avoided and minimized: <i>See addendum</i>				
Describe how the impact to waters of the United States will be compensated. OR Explain why compensatory mitigation should not be required for the proposed impacts. <i>See addendum</i>				

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**13 Floodplain Activities** (See Sample Drawing 5 and others. Complete other applicable sections.)

- For more information go to www.mi.gov/floodplainmanagement. This site also lists the projects and requirements for an expedited floodplain review under "Expedited Review Information for Minor Floodplain Projects."
- Examples of projects proposed within the non-floodway portions of the 100-year-floodplain which may qualify for an expedited review. Open pile decks and boardwalks; residences, commercial/industrial facilities, garages and accessory structures; parking lots; pavilions, gazebos, large community playground structures; residential swimming pools
- Examples of projects proposed within the floodway portions of the floodplain which may qualify for an expedited review. Open pile decks and boardwalks, (non-enclosed) that are anchored to prevent floatation and that do not extend over the bed and bank of a watercourse; parking lots constructed at grade or resurfacing that is no more than 4 inches above the existing grade; dry hydrants that do not require fill placement; scientific structure such as staff gauges, water monitoring devices, water quality testing devices, and core sampling devices which meet specific design criteria and fish structures that meet specific design criteria.
- For expedited review include:
 - Photographs of the work site labeled to identify what is being shown and with the direction of the photo clearly indicated. Include photographs of any river or stream adjacent to the project
 - A letter or statement from the local unit of government acknowledging your proposed application. See the website for sample wording.
- A hydraulic analysis or hydrologic analysis may be required to fully assess floodplain impacts.
- The state building code requires an Elevation Certificate for any building construction or addition in a floodplain. A sample form can be found at www.fema.gov/nfip/elvinst.shtm.
 - Attach additional sheets or tables for multiple proposed floodplain activities and provide hydraulic calculations.
 - Show reference datum used on plans.

Proposed Activity ☒ fill ☐ excavation or cut
☐ other

100-year floodplain elevation (ft) (if known)
Datum ☐ NGVD 29 ☐ NAVD 88 ☐ other

Site is 1 feet above ☒ ordinary high water mark (OHWM) OR ☐ observed water level. Date of observation (M/D/Y) 2/27/09

Fill volume below the 100-year floodplain elevation
(cu yds) 7310

Compensating cut volume below the 100-year floodplain elevation
(cu yds) See addendum

Buildings and/or Additions

Type of construction is ☐ residential ☐ garage/pole barn ☐ non residential ☐ other

Construction is ☐ new ☐ addition AND Serviced by ☐ public sewer ☐ private septic ☐ other

Lowest adjacent grade (ft): existing proposed
datum ☐ NGVD 29 ☐ NAVD 88 ☐ other

Existing Structure Information

Foundation type ☐ basement
☐ concrete slab on grade ☐ pilings
☐ crawl space ☐ other

Foundation floor elevation (ft)

Height of crawl space/basement from finished foundation floor to bottom of floor joists (ft)

Elevation of 1st floor above basement floor/crawl space (ft)

Proposed Structure Information

Foundation type ☐ basement
☐ concrete slab on grade ☐ pilings
☐ crawl space ☐ other

Foundation floor elevation (ft)

Height of crawl space/basement from finished foundation floor to bottom of floor joists (ft)

Elevation of 1st floor above basement floor/crawl space (ft)

For enclosed areas below the flood elevation, such as a crawl space, garages and accessory structures:

Area of proposed foundation (sq ft)

Elevation of proposed enclosed area (ft) datum ☐ NGVD 29 ☐ NAVD 88 ☐ other

Number of flood vents net opening of each vent (sq inches) lowest elevation of flood vents (ft)

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Bridges and Culverts Including Foot and Cart Bridges. (See EZ Guides and Sample Drawings 5, 14A, 14B, 14C, 14D.)			
<ul style="list-style-type: none"> Complete other applicable Sections, including 10A-C. A hydraulic analysis or hydrologic analysis may be required to fully assess impacts. <i>Crescent Blvd Culvert</i> High Water Elevation - describe reference point and highest known water level above or below reference point and date of observation. <ul style="list-style-type: none"> Attach additional sheets for multiple bridges and/or culverts. Provide detailed site-specific drawings of existing and proposed Plan and Elevation View at a scale adequate for detailed review. Provide all information in the boxes below, do not write in a reference to plan sheets. Show reference datum used on plans. 			
Stream Information	The site has a high water elevation (ft) <input checked="" type="checkbox"/> above or <input type="checkbox"/> below the Reference Point of <i>culvert invert</i> Date observed <i>2/27/09</i>		
	Reference datum used <input type="checkbox"/> NGVD 29 <input checked="" type="checkbox"/> NAVD 88 <input type="checkbox"/> IGLD 85 (Great Lakes coastal areas) <input type="checkbox"/> other		
	Average stream width (ft) at the ordinary high water mark (OHWM) outside the influence of any ponding or scour holes around the structure	Upstream	12
		Downstream	12
	Cross-sectional area of primary channel (sq ft) <i>12</i> (See Sample Drawing 14C for more information)		
	The width of the stream where the water begins to overflow its banks. Bankfull width (ft) <i>21</i>		
	The invert of the stream 100-feet from structure (ft)	Upstream	902.0
		Downstream	899.6
Is the existing culvert perched? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If Yes, provide a profile of the channel bottom at the high and low points for a distance of 200 feet upstream and downstream of the culvert.			
Complete this form for each bridge / culvert location.			
Bridge		Existing	Proposed
	Number of bridge spans		
	Bridge type (concrete box beam, concrete I-beam, timber, etc.)		
	Bridge span (length perpendicular to stream) (ft)		
	Bridge width (parallel to stream) (ft)		
	Bottom of bridge beam (ft)	Upstream	
		Downstream	
	Stream invert elevation at bridge (ft)	Upstream	
	Downstream		
Culvert	Bridge rise from bottom of beam to streambed (ft)		
	Number of culverts	0	1
	Culvert type (arch, bottomless, box, circular, elliptical, etc.)		Arch
	Culvert material (concrete, corrugated metal, plastic, etc.)		Concrete
	Culvert length (ft)		96
	Culvert <input checked="" type="checkbox"/> width <input type="checkbox"/> diameter (ft)		24
	Culvert height prior to any burying (ft)		8
	Depth culvert will be buried (ft)		1
	Elevation of culvert crown (ft)	Upstream	908.4
		Downstream	908.4
Complete for both Bridges and Culverts	Higher elevation of <input type="checkbox"/> culvert invert OR <input checked="" type="checkbox"/> streambed within culvert (ft)	Upstream	901.4
		Downstream	900.5
	Entrance design (mitered, projecting, wingwalls, etc.)		wingwalls
	Total structure waterway opening above streambed (sq ft)		153
	Total structure waterway area below the 100-year elevation (sq ft) (if known)		124
	Elevation of road grade at structure (ft)		912.5
	Elevation of low point in road (ft)		911.3
	Distance from low point of road to mid-point of bridge crossing (ft)		0
Length of approach fill from edge of bridge/culvert to existing grade (ft)			24
A Licensed Professional Engineer may certify that your project will not cause a harmful interference for a range of flood discharges up to and including the 100-year flood discharge. The "Required Certification Language" is found under "forms" on the "maps, forms and documents" link from the www.mi.gov/jointpermit page or a copy may be requested by phone, email, or mail. A hydraulic report supporting this certification may also be required.			
Is Certification Language attached? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes			

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21 Bridges and Culverts Including Foot and Cart Bridges. (See EZ Guides and Sample Drawings 5, 14A, 14B, 14C, 14D.)			
<ul style="list-style-type: none">Complete other applicable Sections, including 10A-C.A hydraulic analysis or hydrologic analysis may be required to fully assess impacts. FLINT ST CULVERT Attach hydraulic calculations.High Water Elevation - describe reference point and highest known water level above or below reference point and date of observation.<ul style="list-style-type: none">Attach additional sheets for multiple bridges and/or culverts.Provide detailed site-specific drawings of existing and proposed Plan and Elevation View at a scale adequate for detailed review.Provide all information in the boxes below, do not write in a reference to plan sheets. Show reference datum used on plans.			
Stream Information	The site has a high water elevation (ft) 902 <input checked="" type="checkbox"/> above or <input type="checkbox"/> below the Reference Point of culvert invert Date observed 2/27/09		
	Reference datum used <input type="checkbox"/> NGVD 29 <input checked="" type="checkbox"/> NAVD 88 <input type="checkbox"/> IGLD 85 (Great Lakes coastal areas) <input type="checkbox"/> other		
	Average stream width (ft) at the ordinary high water mark (OHWM) outside the influence of any ponding or scour holes around the structure	Upstream	12
		Downstream	12
	Cross-sectional area of primary channel (sq ft) 12 (See Sample Drawing 14C for more information)		
	The width of the stream where the water begins to overflow its banks. Bankfull width (ft) 13		
	The invert of the stream 100-feet from structure (ft)	Upstream	900.8
	Downstream	899	
Is the existing culvert perched? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If Yes, provide a profile of the channel bottom at the high and low points for a distance of 200 feet upstream and downstream of the culvert.			
Complete this form for each bridge / culvert location.			
Bridge		Existing	Proposed
	Number of bridge spans		
	Bridge type (concrete box beam, concrete I-beam, timber, etc.)		
	Bridge span (length perpendicular to stream) (ft)		
	Bridge width (parallel to stream) (ft)		
	Bottom of bridge beam (ft)	Upstream	
		Downstream	
	Stream invert elevation at bridge (ft)	Upstream	
	Downstream		
Bridge rise from bottom of beam to streambed (ft)			
Culvert	Number of culverts	1	1
	Culvert type (arch, bottomless, box, circular, elliptical, etc.)	Circular	Box
	Culvert material (concrete, corrugated metal, plastic, etc.)	Concrete	Concrete
	Culvert length (ft)	73	66
	Culvert <input checked="" type="checkbox"/> width <input checked="" type="checkbox"/> diameter (ft)	7	14
	Culvert height prior to any burying (ft)	7	6
	Depth culvert will be buried (ft)	6.9	7.9
	Elevation of culvert crown (ft)	Upstream	900.1
		Downstream	899.5
	Higher elevation of <input type="checkbox"/> culvert invert OR <input checked="" type="checkbox"/> streambed within culvert (ft)	Upstream	893.1
	Downstream	892.5	
Complete for both Bridges and Culverts	Entrance design (mitered, projecting, wingwalls, etc.)	wingwall	wingwalls
	Total structure waterway opening above streambed (sq ft)	38	84
	Total structure waterway area below the 100-year elevation (sq ft) (if known)	38	84
	Elevation of road grade at structure (ft)	907	907
	Elevation of low point in road (ft)	907	907
	Distance from low point of road to mid-point of bridge crossing (ft)	0	0
	Length of approach fill from edge of bridge/culvert to existing grade (ft)	0	0
	A Licensed Professional Engineer may certify that your project will not cause a harmful interference for a range of flood discharges up to and including the 100-year flood discharge. The "Required Certification Language" is found under "forms" on the "maps, forms and documents" link from the www.mi.gov/jointpermit page or a copy may be requested by phone, email, or mail. A hydraulic report supporting this certification may also be required.		
	Is Certification Language attached? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes		

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15 Stream, River, or Drain Construction, Relocation and Enclosure Activities		
<ul style="list-style-type: none">• Complete Section 10C for riprap activities.• If side casting or other proposed activities will impact wetlands or floodplains, complete Sections 12 and 13, respectively.<ul style="list-style-type: none">⇒ Provide a scaled overall site plan showing existing lakes, streams, wetlands, and other water features; existing structures; and the location of all proposed structures and land change activities.⇒ Provide scaled cross-section (elevation) drawings necessary to clearly show existing and proposed conditions.⇒ For activities on legally established county drains, provide original design and proposed dimensions and elevations.		
Stream Information	Water elevation (ft) <i>See addendum</i> <input type="checkbox"/> NGVD 29 <input checked="" type="checkbox"/> NAVD 88 <input type="checkbox"/> IGLD 85 (Great Lakes coastal areas) <input type="checkbox"/> other ⇒ Show elevation on plans with description.	
	Dimensions (ft) of existing stream/drain channel (ft) length width depth	
	Existing channel average water depth in a normal year (ft)	
Proposed Activity <input checked="" type="checkbox"/> enclosure <input checked="" type="checkbox"/> improvement <input type="checkbox"/> maintenance <input type="checkbox"/> new drain <input type="checkbox"/> relocation <input type="checkbox"/> wetlands <input type="checkbox"/> other		
If an enclosed structure is proposed, check material type <input checked="" type="checkbox"/> concrete <input type="checkbox"/> corrugated metal <input type="checkbox"/> plastic <input type="checkbox"/> other		
Dimensions (ft) of the structure: diameter length		Volume of fill (cu yds)
Will old/enclosed stream channel be backfilled to top of bank grade? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes		
Length of channel to be abandoned (ft)		Volume of fill (cu yds)
Dimensions (ft) of improved, maintained, new, relocated or wetland stream/drain channel. length width depth		Volume of dredge/excavation (cu yds)
How will slopes and bottom be stabilized?		Proposed side slopes (vertical / horizontal)
Spoils Disposal	Dredged or excavated spoils will be placed <input checked="" type="checkbox"/> on-site <input type="checkbox"/> landfill <input type="checkbox"/> USACE confined disposal facility <input type="checkbox"/> other upland off-site	
	For disposal, provide a ⇒ Detailed spoils disposal area location map and site plan with property lines. ⇒ Letter of authorization from property owner of spoils disposal site, if disposed off-site.	
16 Drawdown of an Impoundment		
<ul style="list-style-type: none">• If wetlands will be impacted, complete Section 12.		
Type of drawdown <input type="checkbox"/> over winter <input type="checkbox"/> temporary <input type="checkbox"/> one-time event <input type="checkbox"/> annual event <input type="checkbox"/> permanent (dam removal) <input type="checkbox"/> other		
Reason for drawdown		
Has there been a previous drawdown? <input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, provide date (M/D/Y)		Previous DEQ permit number, if known
Does waterbody have established legal lake level? <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Not Sure		Dam ID Number, if known
Extent of vertical drawdown (ft)	Impoundment design head (ft)	Number of adjoining or impacted property owners
Date drawdown would start (M/D/Y)	Date drawdown would stop (M/D/Y)	Rate of drawdown (ft/day)
Date refilling would start (M/D/Y)	Date refill would end (M/D/Y)	Rate of refill (ft/day)
Type of outlet discharge structure to be used <input type="checkbox"/> surface <input type="checkbox"/> bottom <input type="checkbox"/> mid-depth	Impoundment area at normal water level (acres)	Sediment depth behind impoundment discharge structure (ft)

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**Addendum to Joint Permit Application
City of Novi – Applicant
URS Corporation – Agent
Ring Road and Industrial Spur
Oakland County
February 2015**

Section 4. Proposed Project Purpose, Intended Use, and Alternatives Considered

The Ring Road project involves extending the existing Crescent Blvd. from Novi Road to Grand River Avenue, and constructing a spur road (Industrial Spur) from Crescent Blvd. to an adjacent business. Crescent Blvd. will provide improved access to the future redevelopment of the Expo Center property, and an alternate route around the busy Grand River Avenue/Novi Road intersection.

A likely use of the Expo Center property is general office with up to 7-story building(s) similar to the nearby ITC Headquarters. While the size of potential development is unknown, anywhere from 500 and 1000 trips entering the site in the morning and exiting the site in the afternoon could be anticipated.

This project included an analysis of alternatives to avoid or minimize impacts to the natural resources existing within the project area. The following alternatives were considered for this project:

- 1) 5 Lane Road
- 2) 4 Lane Boulevard
- 3) Do nothing

The preferred alternative was the 4 lane boulevard which would entail the same impact as the 5 Lane Road. The do nothing alternative is not a feasible option for the improved access around Grand River Avenue/Novi Road intersection along with the anticipated future redevelopment of the Expo Center property.

Section 10 A. Projects Requiring Fill

The Ring Road project proposes fill for both the wetlands and floodplain impacts involved with the extension of the existing Crescent Blvd. from Novi Road to Grand River Avenue and the construction of the new spur road (Industrial Spur) from Crescent Blvd. to an adjacent business. Below are the fill dimensions in feet and total fill volume in cubic yards for wetlands (0.49 acres) and floodplain (1.14 acres), respectively.

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Wetland Fill Dimensions

Length 125 feet
Width 170 feet
Maximum Depth 7 feet
Total Fill Volume 3,935 cubic yards

Floodplain Fill Dimensions

Crescent Blvd
Length- 450 feet
Width- 80 feet
Depth- 5.1 feet
Total Fill Volume- 6800 cubic yards

Industrial Spur
Length 360 feet
Width 20 feet
Depth 1.9 feet
Total Fill Volume 510 cubic yards

Total Fill Volume 7310 cubic yards

Section 10. C Projects requiring Riprap

Riprap waterward of shoreline at ends of proposed open bottom arch culvert

Length 50 feet
Wide 40 feet
Depth 12 feet

Length 50 feet
Wide 40 feet
Depth 12 feet

Heavy Riprap Volume = 149 cubic yards

Riprap waterward of shoreline at ends of proposed box culvert

Length 40 feet
Wide 20 feet
Depth 12 feet

Length 10 feet
Wide 20 feet

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Depth 12 feet

Total fill volume 37 cubic yards

Section 12. Activities that may impact wetlands

Describe the wetland impacts, proposed use or development and efforts to avoid/minimize impacts. Describe the wetland alternatives and provide the type and amount of mitigation proposed.

Wetlands will be impacted by extending the existing Crescent Blvd. from Novi Road to Grand River Avenue, and constructing a spur road (Industrial Spur) from Crescent Blvd. to an adjacent business. Alternative designs included a 5 lane road. After discussing this alternative, it was determined the preferred alternative of a 4 lane boulevard will minimize the impacts to wetlands as much as possible. All wetland impacts were minimized as much as possible without compromising the safety and standards of the proposed road improvements. In areas where wetland impacts are unavoidable, best management practices will be implemented to ensure the water quality and protection of habitat.

Wetland mitigation will be required for the proposed activity based upon the permanent impact to 0.49 acres of wetland. A ratio of 2:1 is suggested for creation of wetland mitigation. It is proposed that the 0.49 acres of wetland impact be mitigated with 0.98 acres of wetland. The City of Novi already has set aside 2.32 acres of existing wetland mitigation bank for this project per permit # 97-10-1163 which is located along 13 Mile Road.

Section 13. Floodplain Activities

In Section 13, Floodplain Activities, of the permit application, 7,310 cubic yards of fill is proposed below the 100-year floodplain elevation, and 0 cubic yards of cut within the floodplain is proposed. Below are reasons as for why this project will not provide a suitable amount of compensatory cut.

- 1) The remaining natural area within the project site does not provide the necessary compensating cut volume of 7,310 cubic yards for this project to mitigate the fill volume.
- 2) The design and safety standards for the proposed road improvements are adhered to and can not be modified to provide less of an impact to the existing floodplain.
- 3) The remaining natural area that could provide very minimal volume of compensating cut towards the fill volume proposed and be further outweighed by the removal of existing trees.
- 4) Improvements downstream with the replacement of the existing 74 foot concrete culvert with the 66 foot box culvert greatly improves the upstream flow and subsequently minimizes the area of existing floodplain.

Due to the reasons outlined above, the City of Novi and URS have determined that performing compensatory floodplain cut for the Ring Road Industrial Spur project is not practical. Due to the location of the floodplain fill and the limited remaining surrounding area, a compensatory cut will achieve little in the way of hydraulic benefit, but will cause harm to the ecosystem disrupted by the excavation.

Section 15. Stream, River, or Drain Construction Activities

Stream Activity Information	Stream Activity 1- Stream Enclosure Crescent Blvd	Stream Activity 2- Flint Street Culvert
Water elevation (ft) Datum	NAVD88	NAVD88
Dimensions (ft) of existing stream channel to be worked on	96 Length 12 Width 1 Height	NA
Existing channel average water depth in a normal year (ft)	1 foot	1 foot
Proposed activity	Enclosure Improvement	Enclosure Improvement
If an enclosed structure is proposed, type and dimension	Concrete 24 Diameter 96 Length	Concrete 14 Diameter 66 Length
Volume of Fill	Volume of fill	Volume of fill
Will old/enclosed stream channel be backfilled to top of bank grade?	Yes	Yes
Length of channel to be abandoned (ft)	0	0
Volume of fill (cu yds)	NA	NA
Dimensions (ft) of new, relocated, or enclosed stream	96 Length 24 Width 8 Height	66 Length 14 Width 6 Height
Volume of dredge/excavation	NA	NA
How will slopes and bottom be stabilized?	Riprap and geotextile fabric	Riprap and geotextile fabric and plantings

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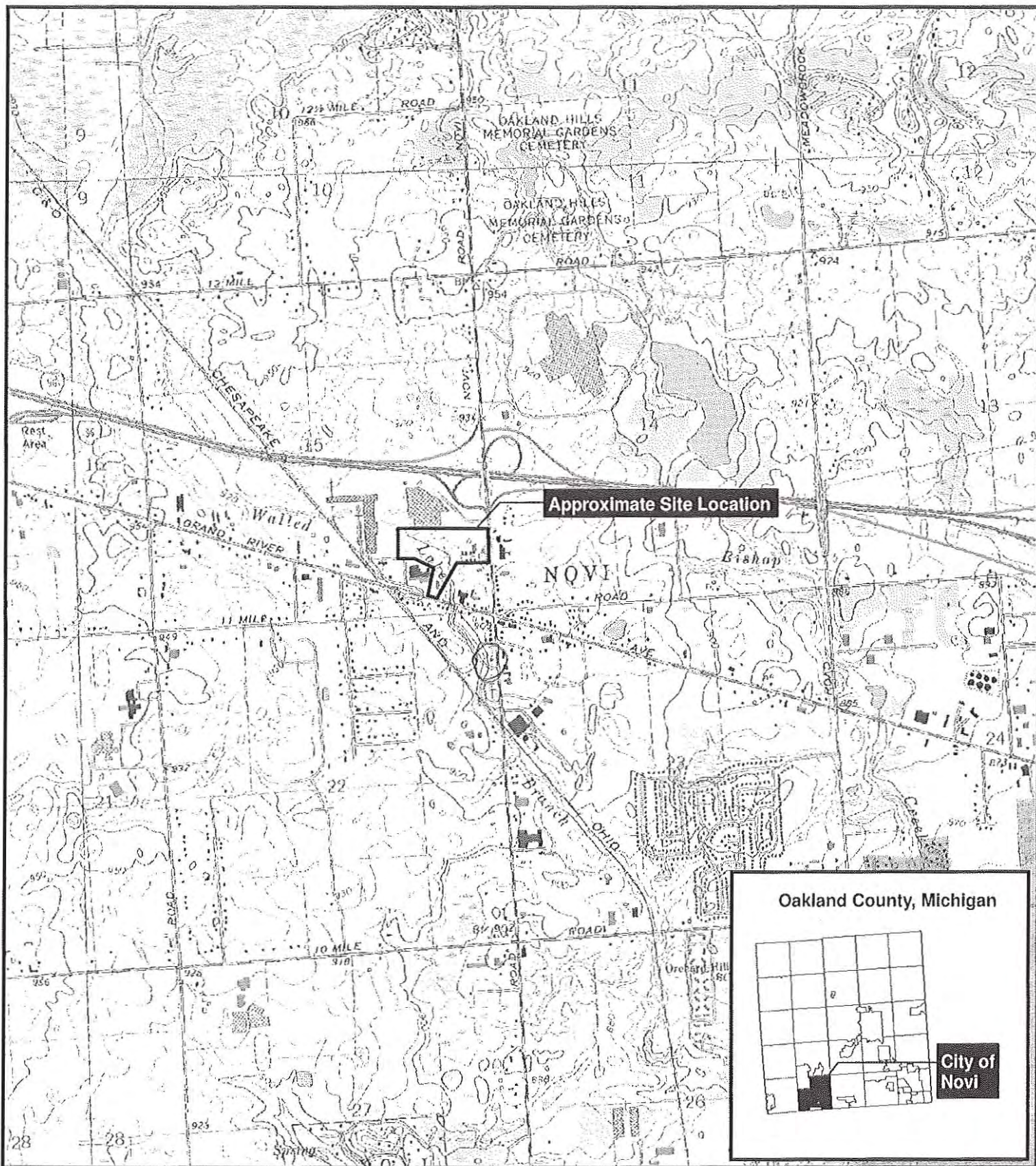
Proposed side slopes (vertical/horizontal)	1:2	1:2
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The new box culvert will allow improved fish passage within the stream and provide a greater surface area of substrate/streambed for use by fish and benthic invertebrates. These are two qualities that the current circular culvert lacks.

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**Figure 1. Site Location and USGS Topographic Map
NORTHWEST QUADRANT RING ROAD AND INDUSTRIAL SPUR
T1N R8E Sections 15 & 22**



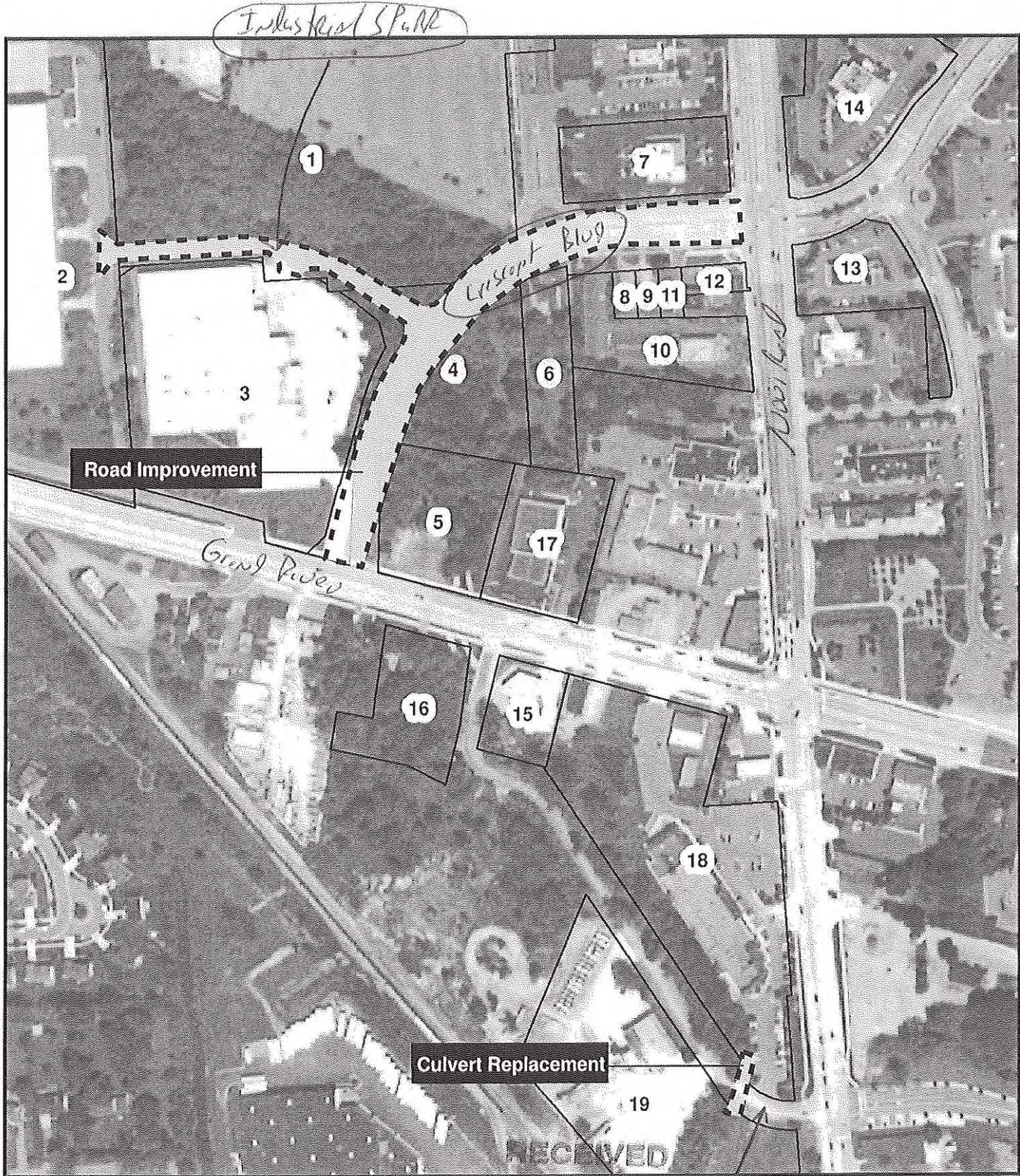
City of Novi – Engineering Department

Created by: JPB, URS Project 12941940, April 22, 2009

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Adjacent Land Owners
NORTHWEST QUADRANT RING ROAD AND INDUSTRIAL SPUR

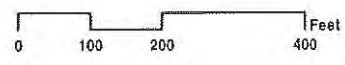
City of Novi – Engineering Department

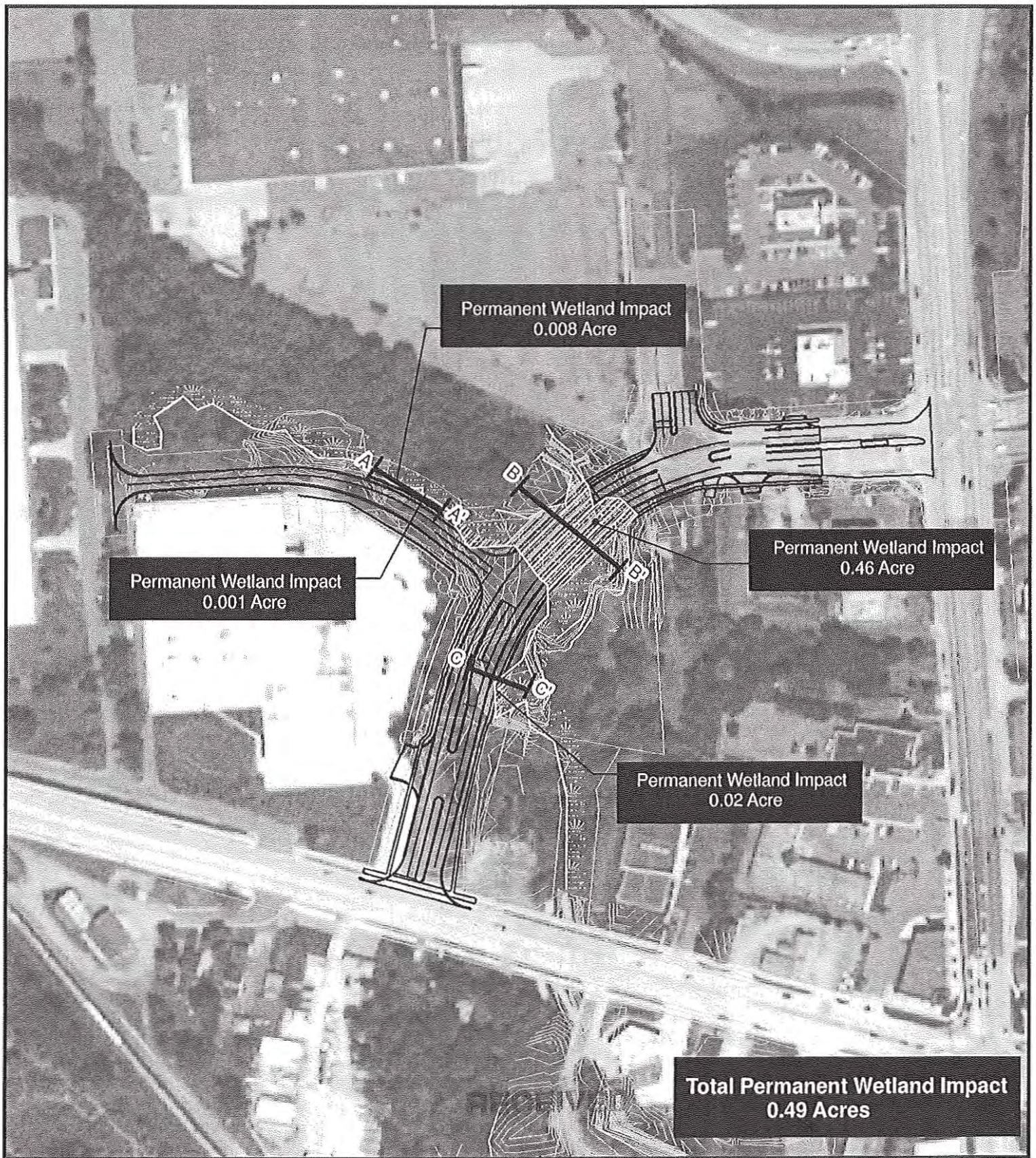
Created by: JPB, URS Project 12941940, July 6, 2009

Legend

Proposed Project Area

Parcels





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0 100 200 400 Feet



Wetland A Impact Plan **NORTHWEST QUADRANT RING ROAD AND INDUSTRIAL SPUR**

City of Novi – Engineering Department

Created by: JPB, URS Project 12941940, July 6, 2009

Delineated Wetland A

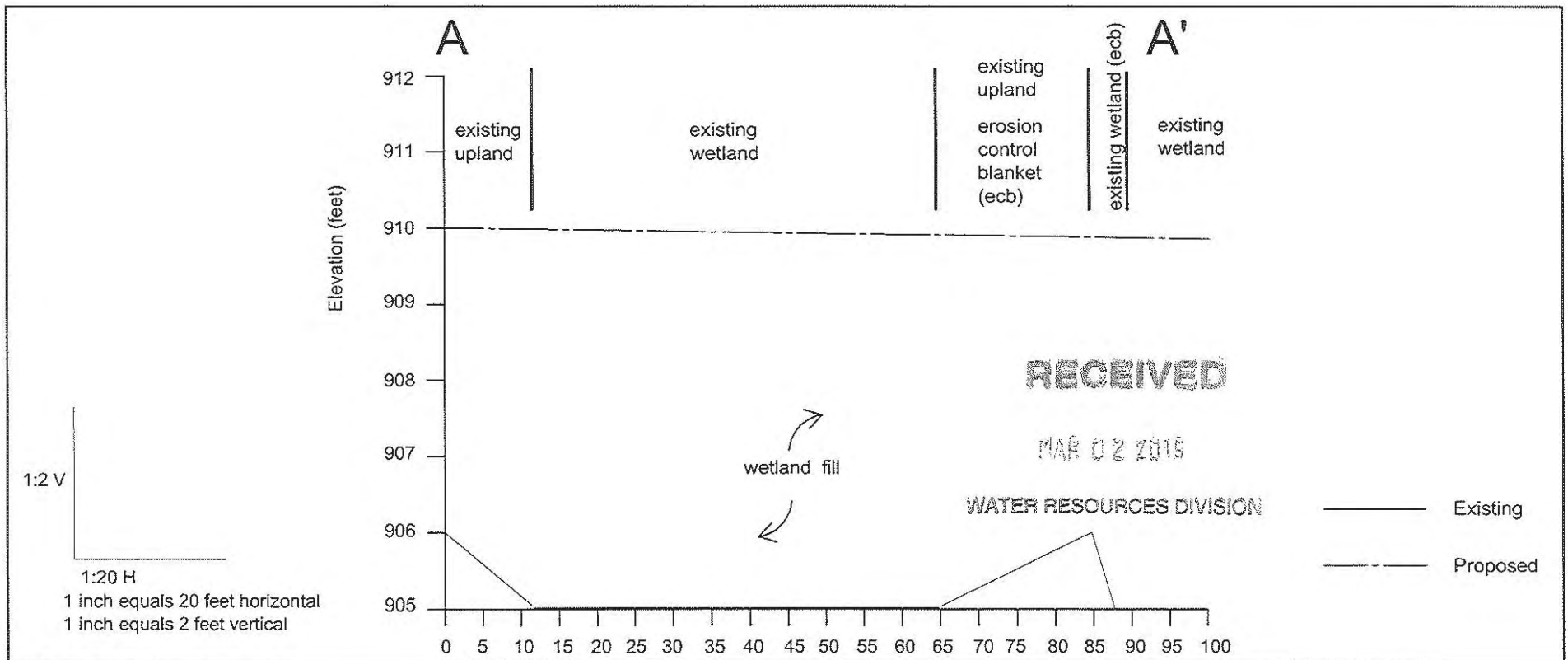
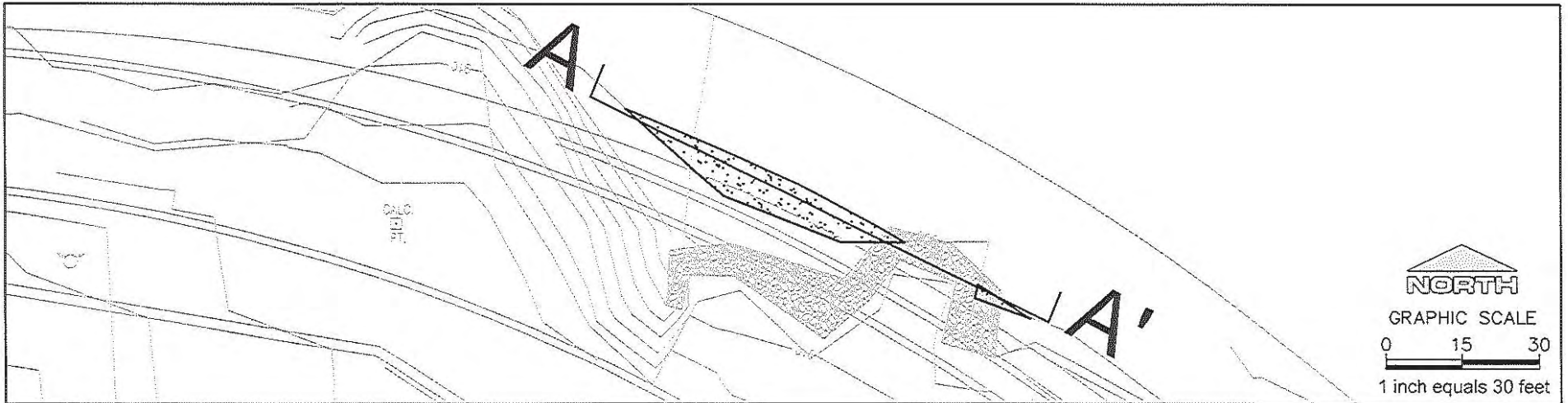


Existing Wetland

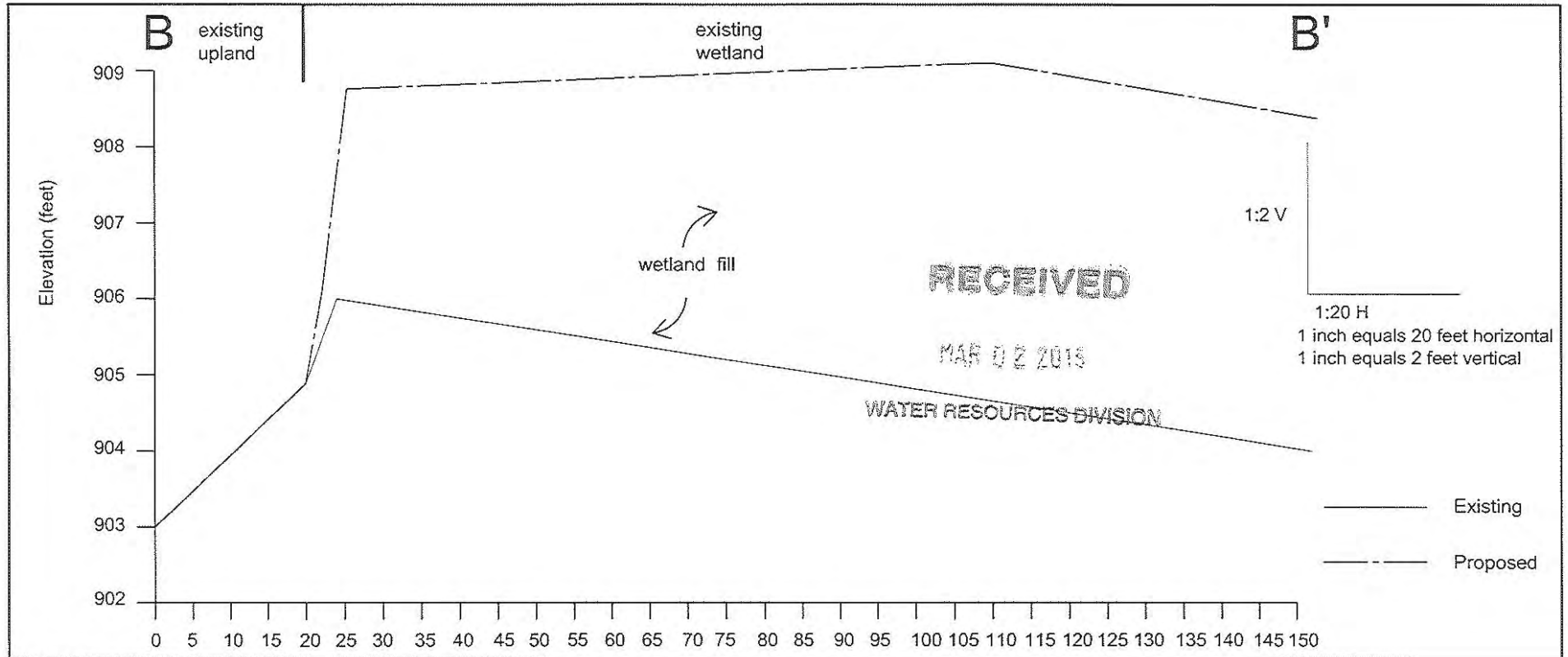
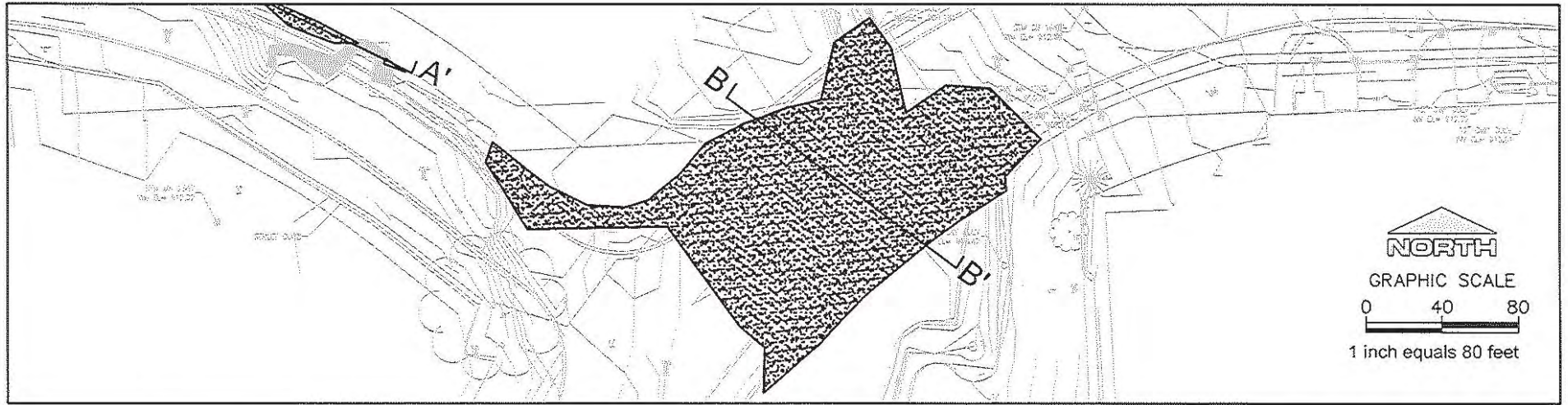


Permanent Wetland Impact

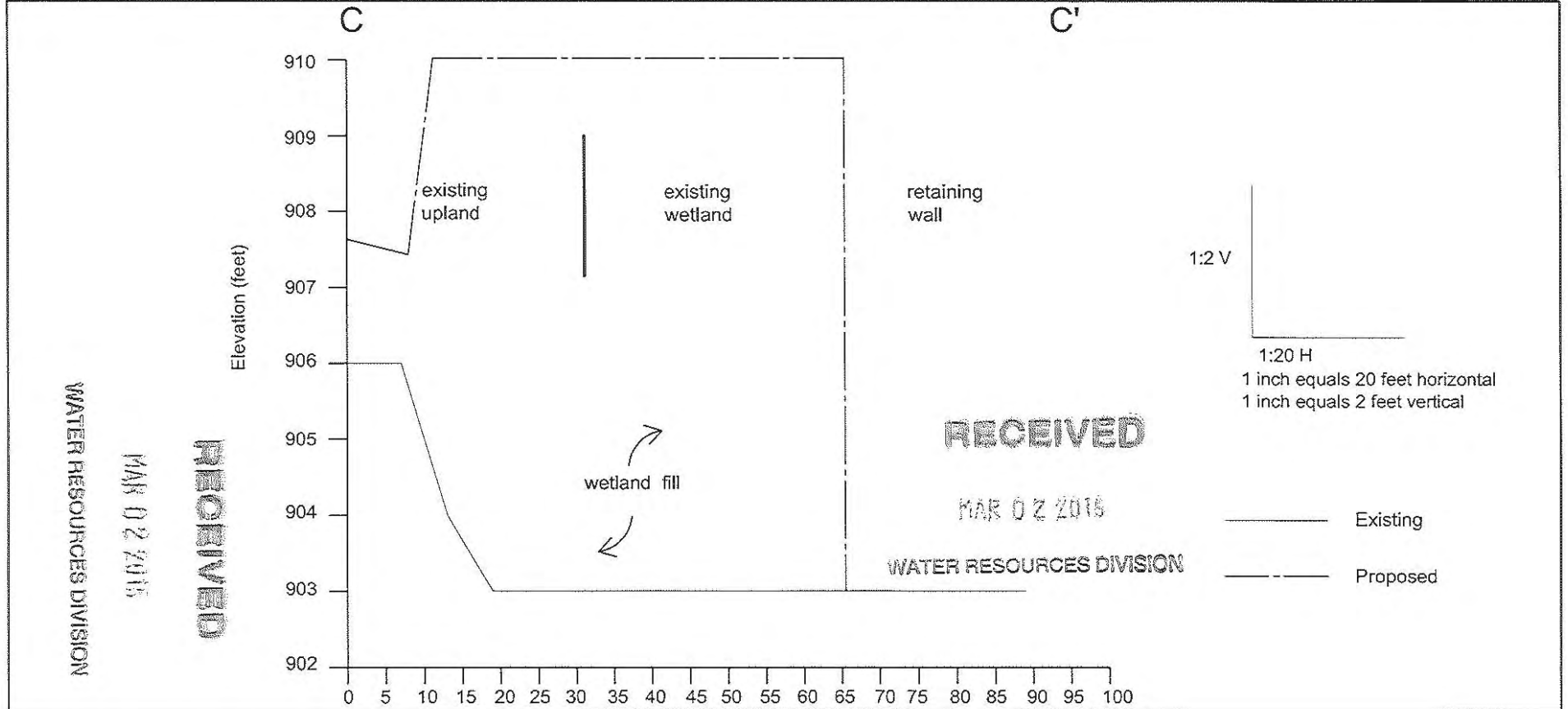
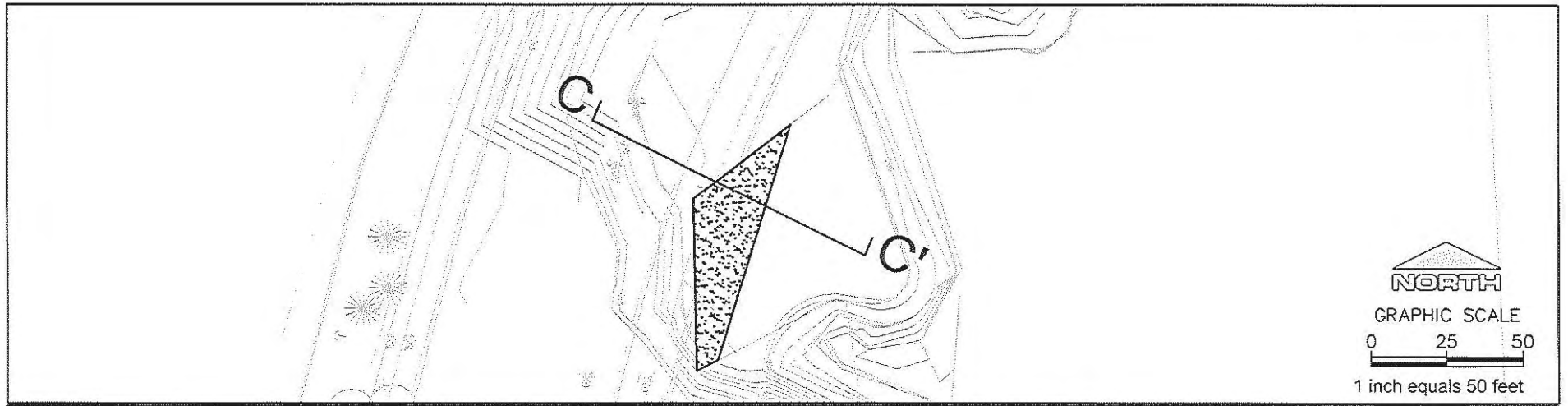
URS



Wetland Impact Cross Section A-A'
NORTHWEST QUADRANT RING ROAD AND
INDUSTRIAL SPUR



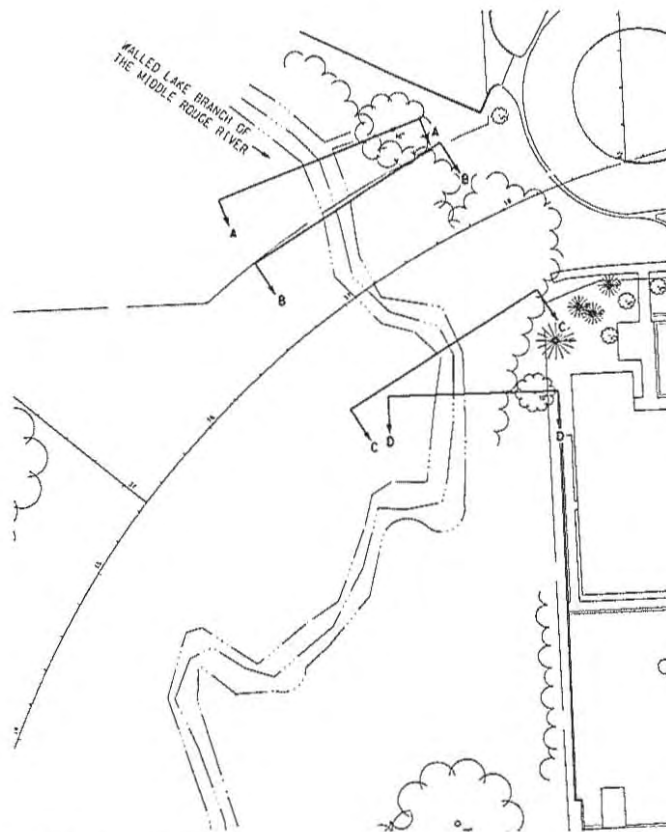
Wetland Impact Cross Section B-B'
NORTHWEST QUADRANT RING ROAD AND
INDUSTRIAL SPUR



Wetland Impact Cross Section C-C'
NORTHWEST QUADRANT RING ROAD AND INDUSTRIAL SPUR
City of Novi- Engineering Department
Created by: JPB, URS Project 12941940, July 7, 2009

EXPO CENTER DR.

EXISTING CONDITION (NO CULVERT)

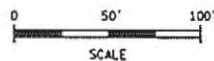


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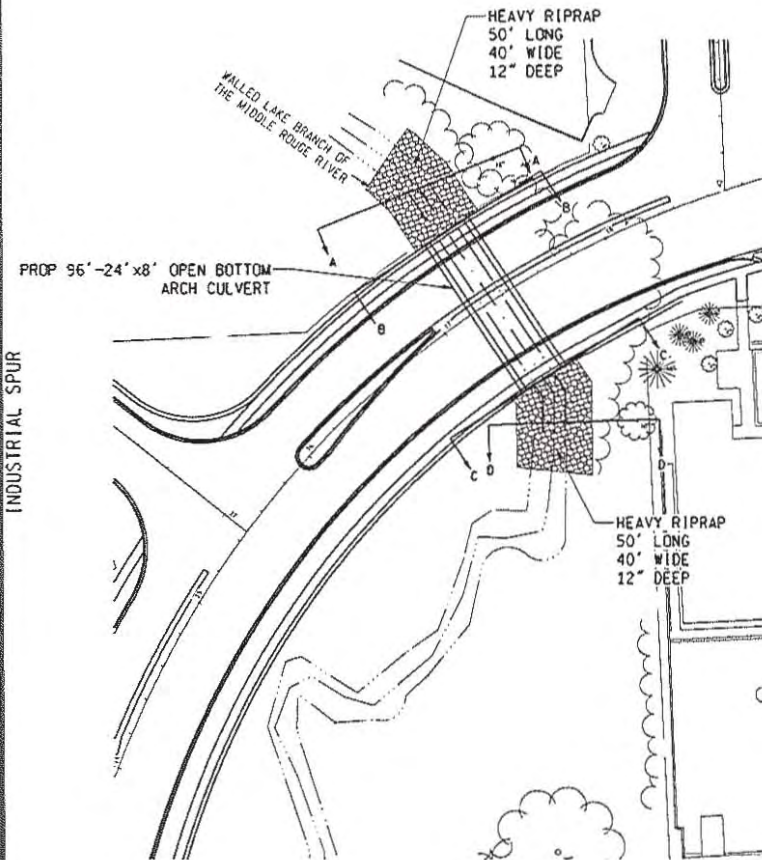
CRESCENT BLVD.

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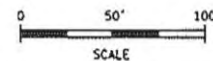
EXPO CENTER DR.

PROPOSED CULVERT



HEAVY RIP RAP
VOLUME = 149 CYD

CRESCENT BLVD.

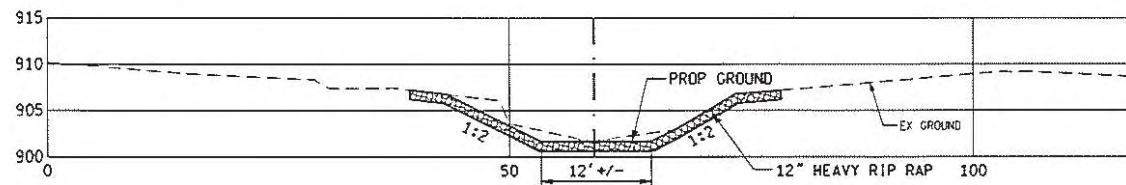


PROPOSED:	STREAM ENCLOSURE
APPLICANT:	CITY OF NOVI
WATERWAY:	MIDDLE ROUGE RIVER
TOWNSHIP:	NOVI
COUNTY:	OAKLAND COUNTY
DATE:	07/21/09

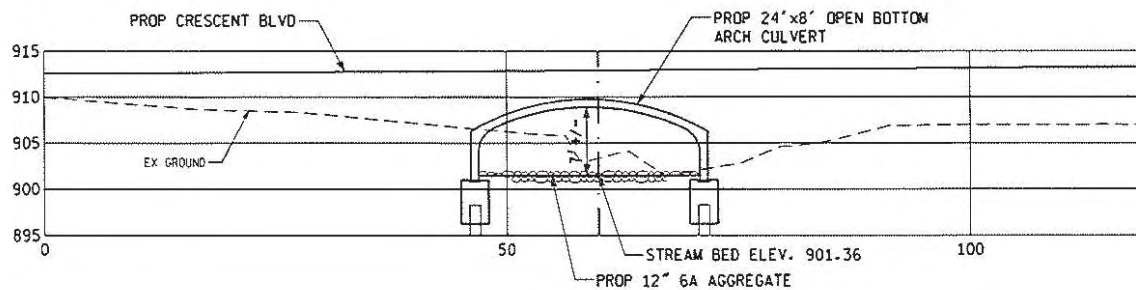
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STREAM ENCLOSURE
CRESCENT BOULEVARD

1 OF 4



SECTION A-A



SECTION B-B

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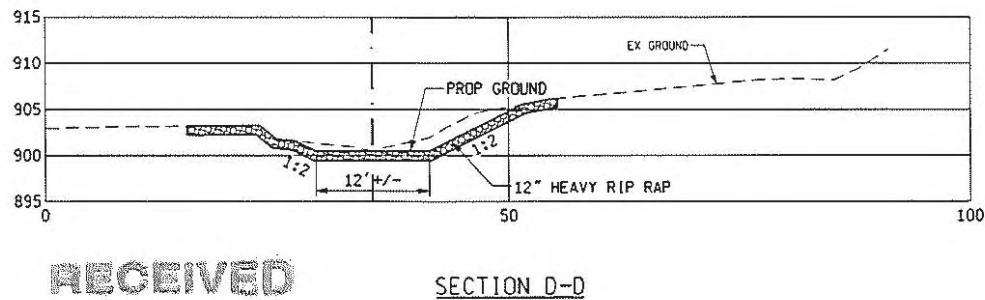
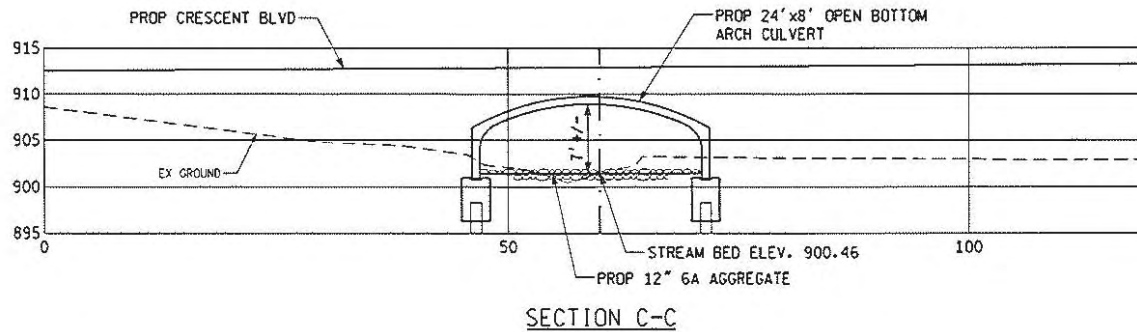
PROPOSED: STREAM ENCLOSURE
APPLICANT: CITY OF NOVI
WATERWAY: MIDDLE ROUGE RIVER
TOWNSHIP: NOVI
COUNTY: OAKLAND
DATE: 07/21/09

0 20'
SCALE

URS

CROSS SECTION VIEWS
CRESCENT BOULEVARD

2 OF 4



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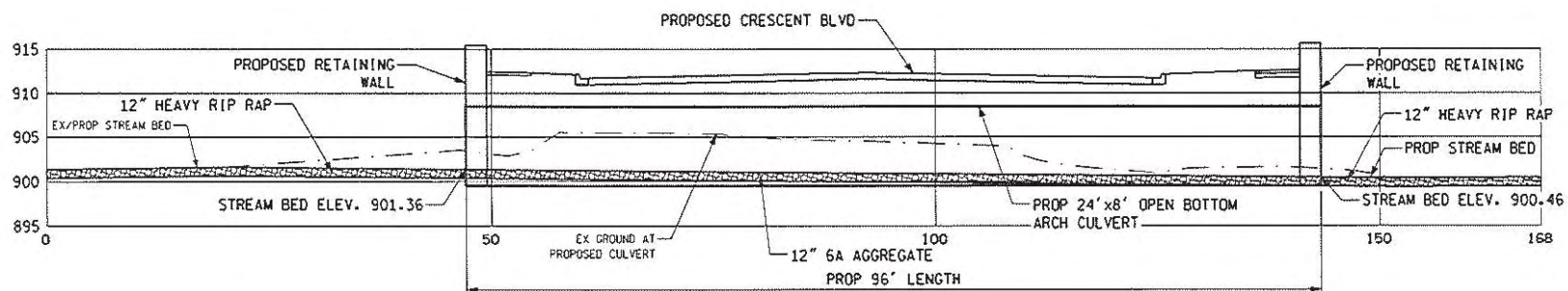
PROPOSED: STREAM ENCLOSURE
 APPLICANT: CITY OF NOVI
 WATERWAY: MIDDLE ROUGE RIVER
 TOWNSHIP: NOVI
 COUNTY: OAKLAND
 DATE: 07/21/09

0 20'
 SCALE

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CROSS SECTION VIEWS
 CRESCENT BOULEVARD

3 OF 4



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PROPOSED: STREAM ENCLOSURE
 APPLICANT: CITY OF NOVI
 WATERWAY: MIDDLE ROUGE RIVER
 TOWNSHIP: NOVI
 COUNTY: OAKLAND
 DATE: 07/21/09

HORIZONTAL 0 20'
 VERTICAL 0 10'
 SCALE

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PROFILE VIEW
 CRESCENT BOULEVARD

4 OF 4



FLINT ST.

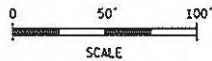
NOVI RD.

FILLED LAKE BRANCH OF
THE MIDDLE ROUGE RIVER

EX 73'-84" CONC CULVERT

EX RETAINING WALL

EXISTING CULVERT



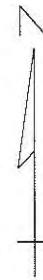
SCALE

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FLINT ST.

NOVI RD.

FILLED LAKE BRANCH OF
THE MIDDLE ROUGE RIVER

PROP 66'-14"x6"
BOX CULVERT

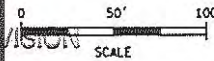
EX RETAINING WALL

PROPOSED CULVERT

HEAVY RIPRAP
40' LONG
20' WIDE
12" DEEP

HEAVY RIPRAP
10' LONG
20' WIDE
12" DEEP

HEAVY RIP RAP
VOLUME = 37 CYD

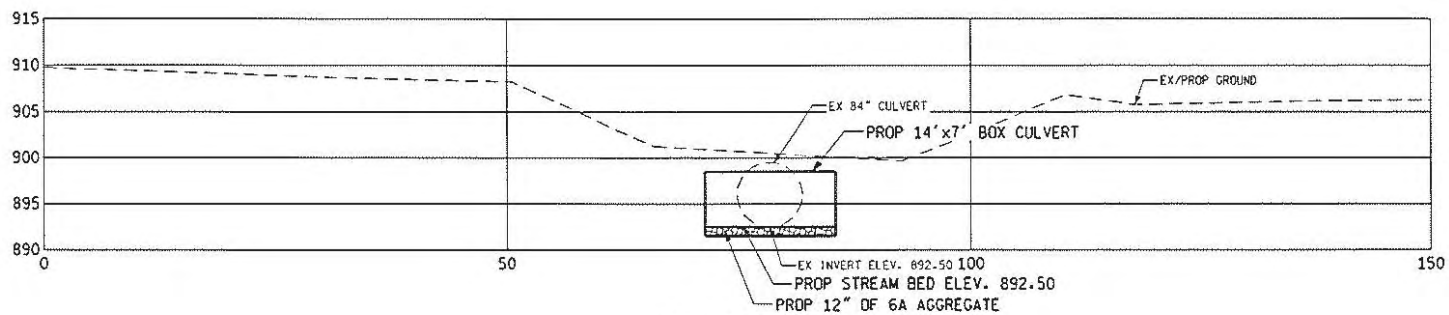


SCALE

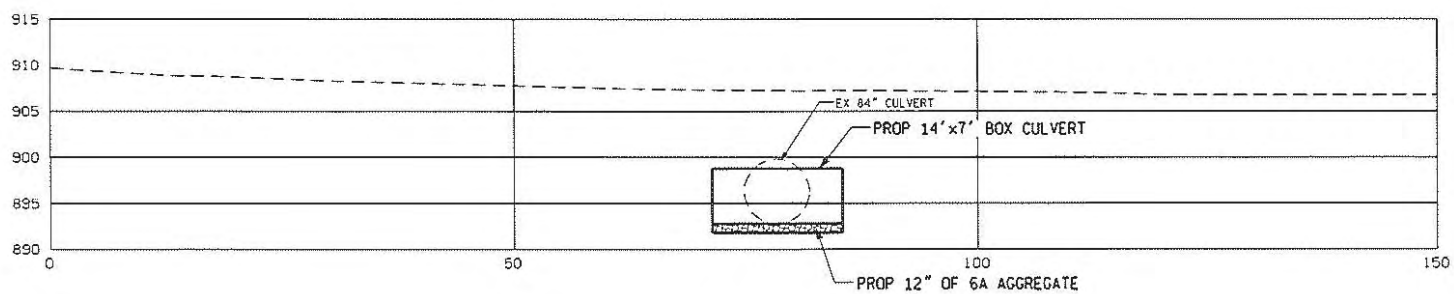
PROPOSED: CULVERT REPLACEMENT
APPLICANT: CITY OF NOVI
WATERWAY: MIDDLE ROUGE RIVER
TOWNSHIP: NOVI
COUNTY: OAKLAND COUNTY
DATE: 07/21/09

FLINT STREET CULVERT
FLINT STREET

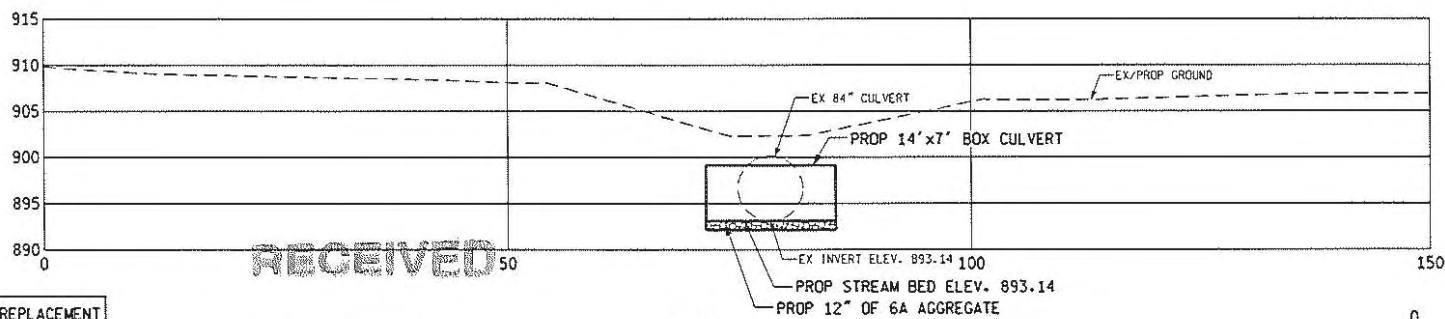
1 OF 3



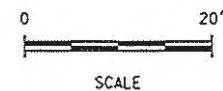
SECTION A-A



SECTION B-B



SECTION C-C



PROPOSED: CULVERT REPLACEMENT
 APPLICANT: CITY OF NOVI
 WATERWAY: MIDDLE ROUGE RIVER
 TOWNSHIP: NOVI
 COUNTY: OAKLAND
 DATE: 07/21/09

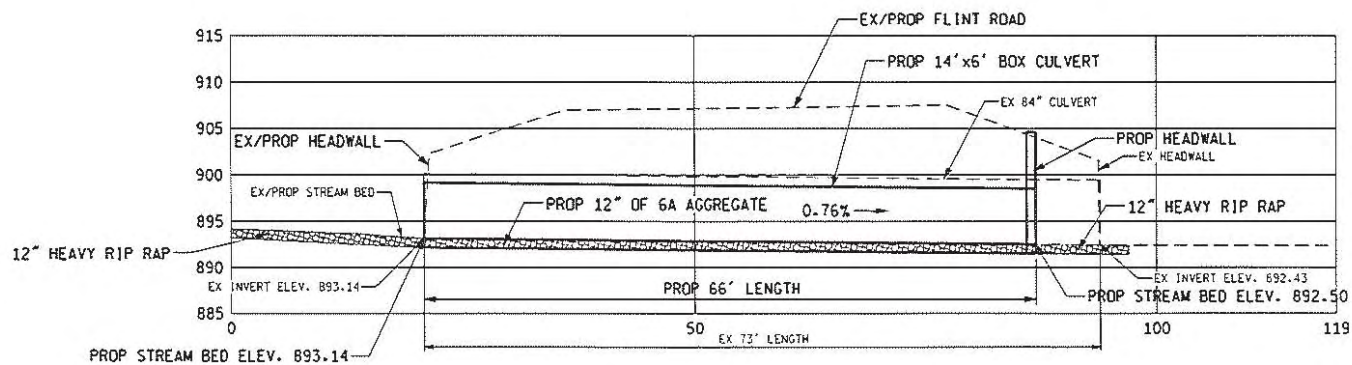
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WATER RESOURCES DIVISION

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CROSS SECTION VIEWS
 FLINT STREET

2 OF 3

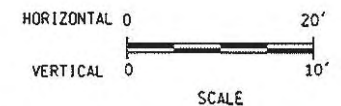


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WATER RESOURCES DIVISION

PROPOSED: CULVERT REPLACEMENT
 APPLICANT: CITY OF NOVI
 WATERWAY: MIDDLE ROUGE RIVER
 TOWNSHIP: NOVI
 COUNTY: OAKLAND
 DATE: 07/21/09



URS

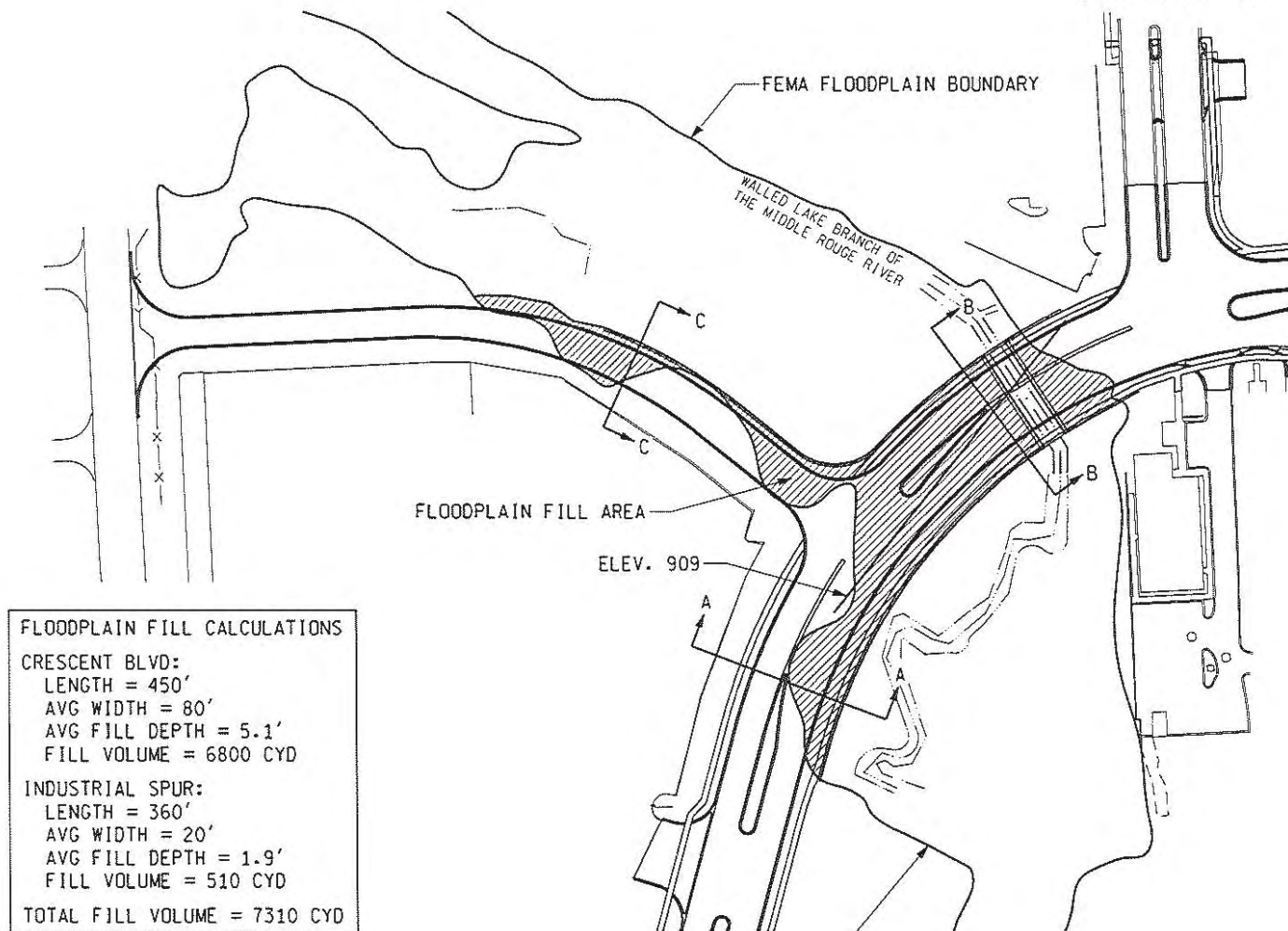
PROFILE VIEW
 FLINT STREET

3 OF 3

INDUSTRIAL SPUR

EXPO CENTER DR

CRESCENT BLVD



FLOODPLAIN FILL CALCULATIONS

CRESCENT BLVD:
 LENGTH = 450'
 AVG WIDTH = 80'
 AVG FILL DEPTH = 5.1'
 FILL VOLUME = 6800 CYD

INDUSTRIAL SPUR:
 LENGTH = 360'
 AVG WIDTH = 20'
 AVG FILL DEPTH = 1.9'
 FILL VOLUME = 510 CYD

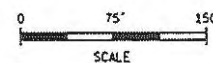
TOTAL FILL VOLUME = 7310 CYD

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FEMA FLOODPLAIN BOUNDARY

CRESCENT BLVD



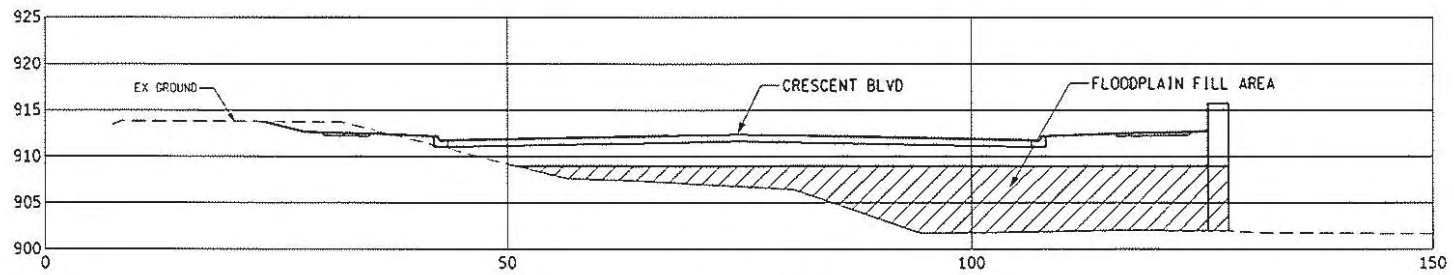
PROPOSED: STREAM ENCLOSURE
 APPLICANT: CITY OF NOVI
 WATERWAY: MIDDLE ROUGE RIVER
 TOWNSHIP: NOVI
 COUNTY: OAKLAND COUNTY
 DATE: 07/21/09

WATER RESOURCES DIVISION

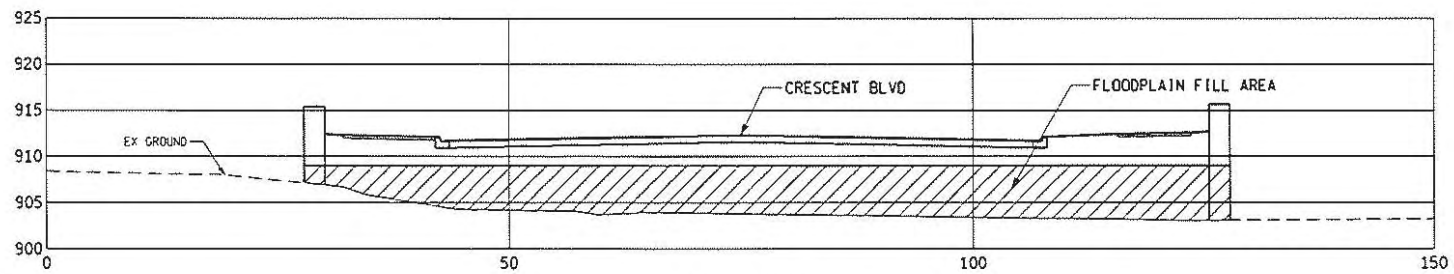
URS

FLOODPLAIN FILL
 CRESCENT BLVD & INDUSTRIAL SPUR

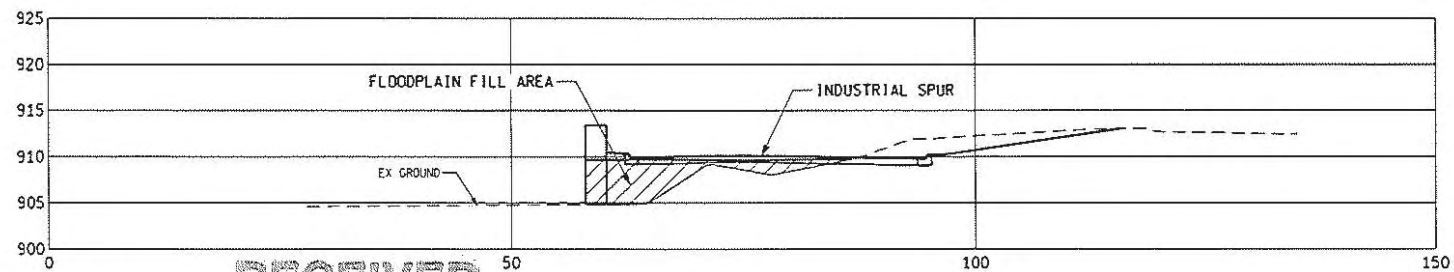
1 OF 2



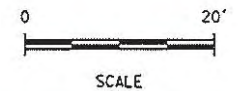
SECTION A-A



SECTION B-B



SECTION C-C



PROPOSED: STREAM ENCLOSURE
 APPLICANT: CITY OF NOVI
 WATERWAY: MIDDLE ROUGE RIVER
 TOWNSHIP: NOVI
 COUNTY: OAKLAND
 DATE: 07/21/09

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WATER RESOURCES
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CROSS SECTION VIEWS
 CRESCENT BLVD & INDUSTRIAL SPUR

2 OF 2

INDUSTRIAL SPUR

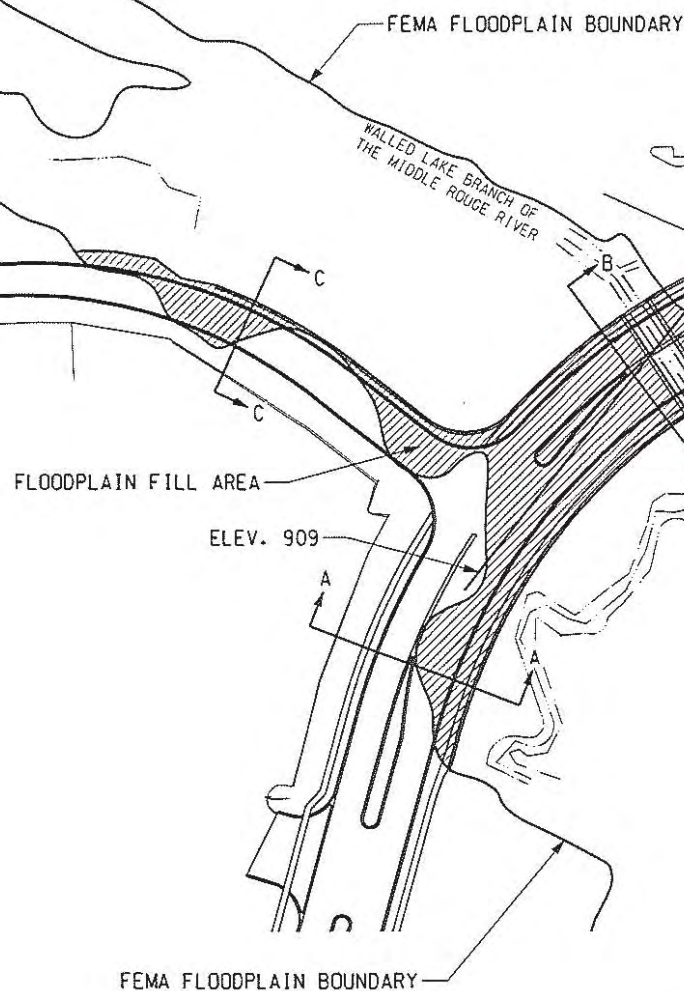
EXPO CENTER DR

CRESCENT BLVD

FLOODPLAIN FILL CALCULATIONS
CRESCENT BLVD:
LENGTH = 450'
AVG WIDTH = 80'
AVG FILL DEPTH = 5.1'
FILL VOLUME = 6800 CYD
INDUSTRIAL SPUR:
LENGTH = 360'
AVG WIDTH = 20'
AVG FILL DEPTH = 1.9'
FILL VOLUME = 510 CYD
TOTAL FILL VOLUME = 7310 CYD

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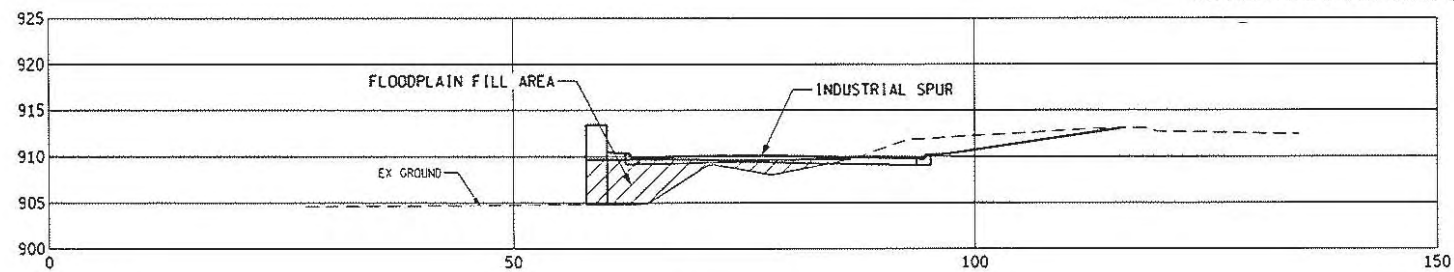
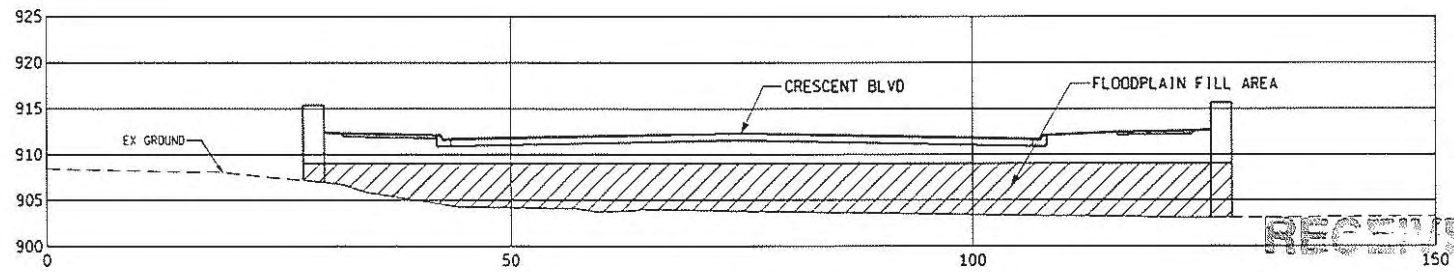
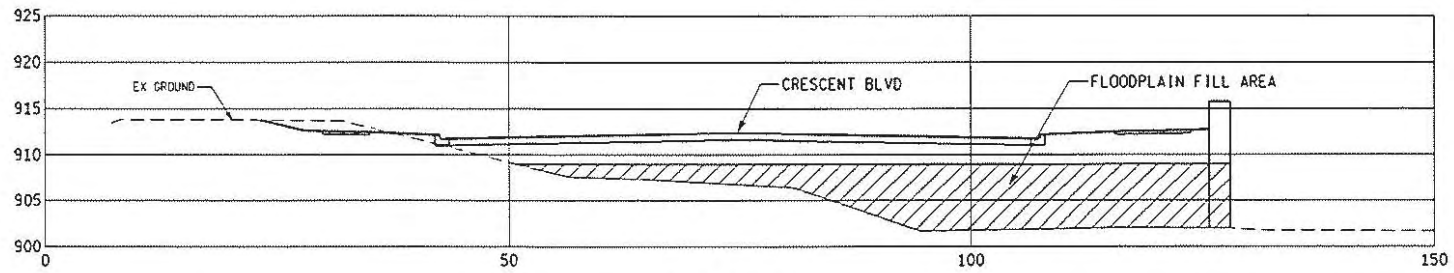
PROPOSED: STREAM ENCLOSURE
APPLICANT: CITY OF NOVI
WATERWAY: MIDDLE ROUGE RIVER
TOWNSHIP: NOVI
COUNTY: OAKLAND COUNTY
DATE: 07/21/09

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FLOODPLAIN FILL
CRESCENT BLVD & INDUSTRIAL SPUR

1 OF 2



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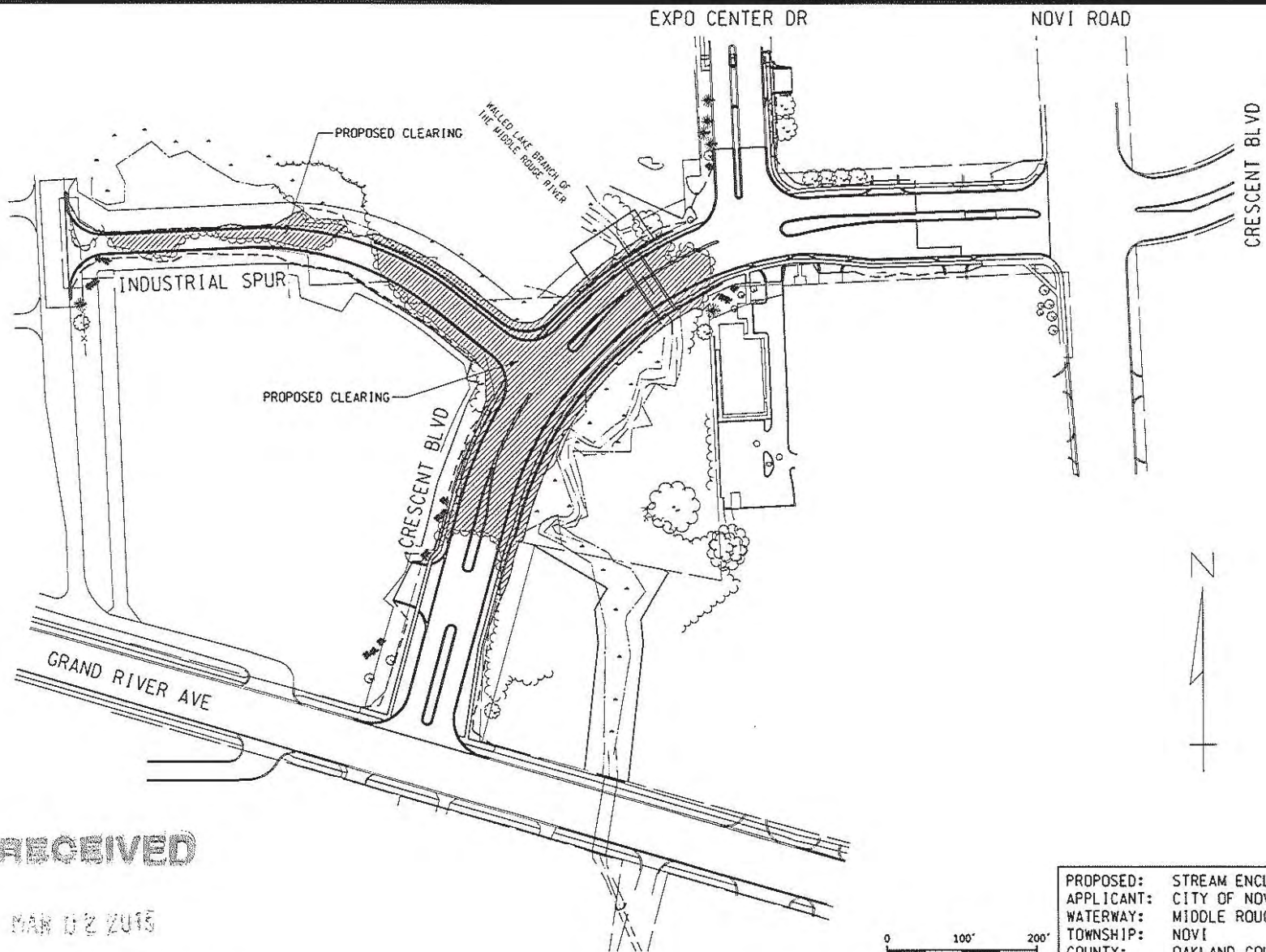
PROPOSED: STREAM ENCLOSURE
APPLICANT: CITY OF NOVI
WATERWAY: MIDDLE ROUGE RIVER
TOWNSHIP: NOVI
COUNTY: OAKLAND
DATE: 07/21/09

0 20'
SCALE

URS

CROSS SECTION VIEWS
CRESCENT BLVD & INDUSTRIAL SPUR

2 OF 2



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WATER RESOURCES DIVISION

PROPOSED:	STREAM ENCLOSURE
APPLICANT:	CITY OF NOVI
WATERWAY:	MIDDLE ROUGE RIVER
TOWNSHIP:	NOVI
COUNTY:	OAKLAND COUNTY
DATE:	07/21/09

0 100' 200'
SCALE

URS

CLEARING LIMITS
CRESCENT BLVD

1 OF 1



WATER RESOURCES DIVISION

Wetland and Stream Restoration Plan

One coir log with live pussy willow (*Salix discolor*) and red-osier dogwood (*Cornus sericea*) stakes will be placed at the base of the stream. If a substantial slope is present, a coir log can be placed near the top of the slope as well. The North American Green BioNet C125BN 100% coconut fiber erosion control blanket is recommended for the remainder of the bank. This double net erosion control blanket is 100% biodegradable. Both native shrub plugs and a native wetland seed mix will also be placed on the banks.

Optimum seeding/planting time is October 1 to June 15. It can be done outside of this window but establishment may take longer. Mid-summer seeding is not recommended.

If there are disturbed slopes upslope from wetland areas, these are best stabilized prior to wetland seeding, to prevent erosion into the wetland. Other erosion controls (silt fences, mulch blankets, straws etc.) should be installed prior to seeding.

Scarify soil surface by raking or shallow tilling. Press seed into soil using a roller or similar equipment. Light raking may also be used but do not cover seed more than ¼" deep. Seed each mix at rates per acre recommended by seed distributor. Below is the suggested wetland seed mix. This mix is recommended for newly reforested areas to provide soil stabilization and to minimize competition by weedy species.

Forbs and Shrubs

Scientific Name	Common Name	Oz/Acre
<i>Alisma sp.</i>	water plantain	3.00
<i>Angelica atropurpurea</i>	great angelica	1.00
<i>Aster puniceus</i>	bristly aster	0.75
<i>Aster umbellatus</i>	flat-top aster	0.25
<i>Bidens cernua</i>	nodding bur marigold	2.50
<i>Campanula americana</i>	tall bellflower	0.25
<i>Cephalanthus occidentalis</i>	buttonbush	0.50
<i>Helenium autumnale</i>	sneezeweed	2.00
<i>Heracleum lanatum</i>	cow parsnip	0.75
<i>Hibiscus moscheutos</i>	swamp rose mallow	2.00
<i>Lobelia siphilitica</i>	great blue lobelia	1.50
<i>Lycopus americanus</i>	common water horehound	0.25
<i>Mimulus ringens</i>	monkey flower	1.25
<i>Penthorum sedoides</i>	ditch stonecrop	0.50
<i>Polygonum</i>	smartweed	0.50
<i>Rudbeckia laciniata</i>	wild golden glow	0.75
<i>Verbena alternifolia</i>	wingstem	2.00

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Grasses and Sedges

Scientific Name	Common Name	Oz/Acre
<i>Calamagrostis canadensis</i>	bluejoint grass	1.00
<i>Carex crinita</i>	fringed sedge	2.00
<i>Carex lupulina</i>	common hop sedge	4.00
<i>Carex lurida</i>	bottlebush sedge	1.50
<i>Carex frankii</i>	bristly cattail sedge	3.00
<i>Carex squarrosa</i>	narrow-leaved cattail sedge	1.00
<i>Carex typhina</i>	common cattail sedge	1.00
<i>Carex vulpinoidea</i>	brown fox sedge	4.00
<i>Elymus virginicus</i>	Virginia wild rye	20.00
<i>Glyceria striata</i>	fowl manna grass	2.00
<i>Leersia oryzoides</i>	rice cut grass	2.00
<i>Scirpus atrovirens</i>	dark green rush	2.00
<i>Spartina pectinata</i>	prairie cord grass	1.00
<i>Avena sativa</i>	common oat	360.00
<i>Lolium multiflorum</i>	annual rye	100.00

Wetland Shrubs and Trees should be planted just above waterline. See species lists below:

Proposed Shrub Plugs (>2 inch)

Scientific Name	Common Name
<i>Cornus amomum</i>	silky dogwood
<i>Cornus sericea</i>	red-osier dogwood
<i>Physocarpus opulifolius</i>	ninebark
<i>Salix discolor</i>	pussy willow

Proposed Canopy Trees (3 inch caliper) and Sub Canopy
Trees (2.5 inch caliper) derived from the City of Novi
Landscape Design Manual

Scientific Name	Common Name
<i>Quercus rubra</i> (Canopy)	Red Oak
<i>Juglans nigra</i> (Canopy)	Black Walnut
<i>Cornus florida</i> (Sub Canopy)	Flowering Dogwood
<i>Ostrya virginiana</i> (Sub Canopy)	Hophornbeam

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WATER RESOURCES DIVISION

City of Novi
Northwest Quadrant Ring Road and Industrial Spur
Best Management Practice
Wetland De-watering

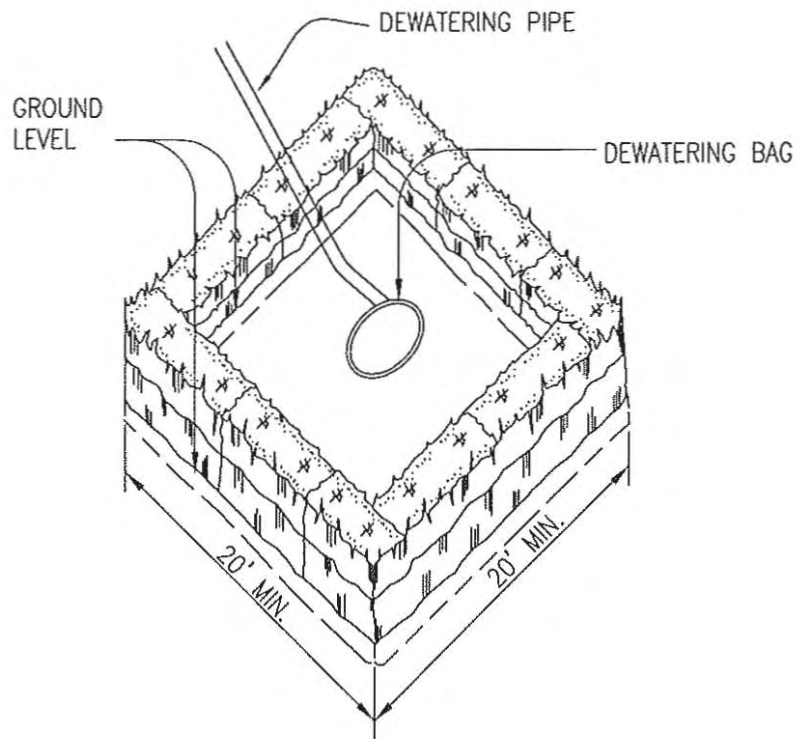
The following best management practices will be used during the de-watering of the stream for construction to take place in the dry for the culvert replacement:

- All de-watering will occur through a sediment filter bag and will be discharged to a well vegetated upland area with two tiers of silt fence in place to catch any remaining sediment. Due to the velocity of the proposed de-watering, the attached de-watering structure designs are recommended (attachment A).
- Silt fence will be constructed from synthetic mesh material designed to retain silt while allowing water to pass through.
- If sediment filter bags become full they need to be replaced with a new sediment filter bag.
- Sediment filter bags and any sediment in them will be disposed of in a proper landfill.
- Once de-watering is complete the cofferdam will be removed.
- Grading of the area for stream restoration can then take place.
- Seeding and mulch for permanent stabilization.

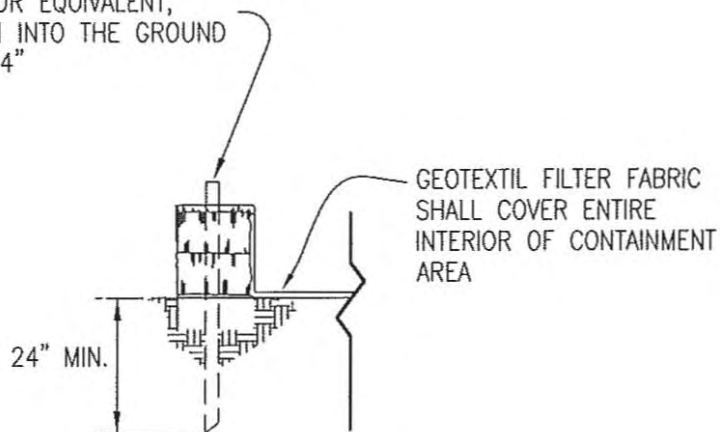
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2 - 1-1/2"x1-1/2"x6' STAKES PER
BALE OR EQUIVALENT,
DRIVEN INTO THE GROUND
MIN. 24"

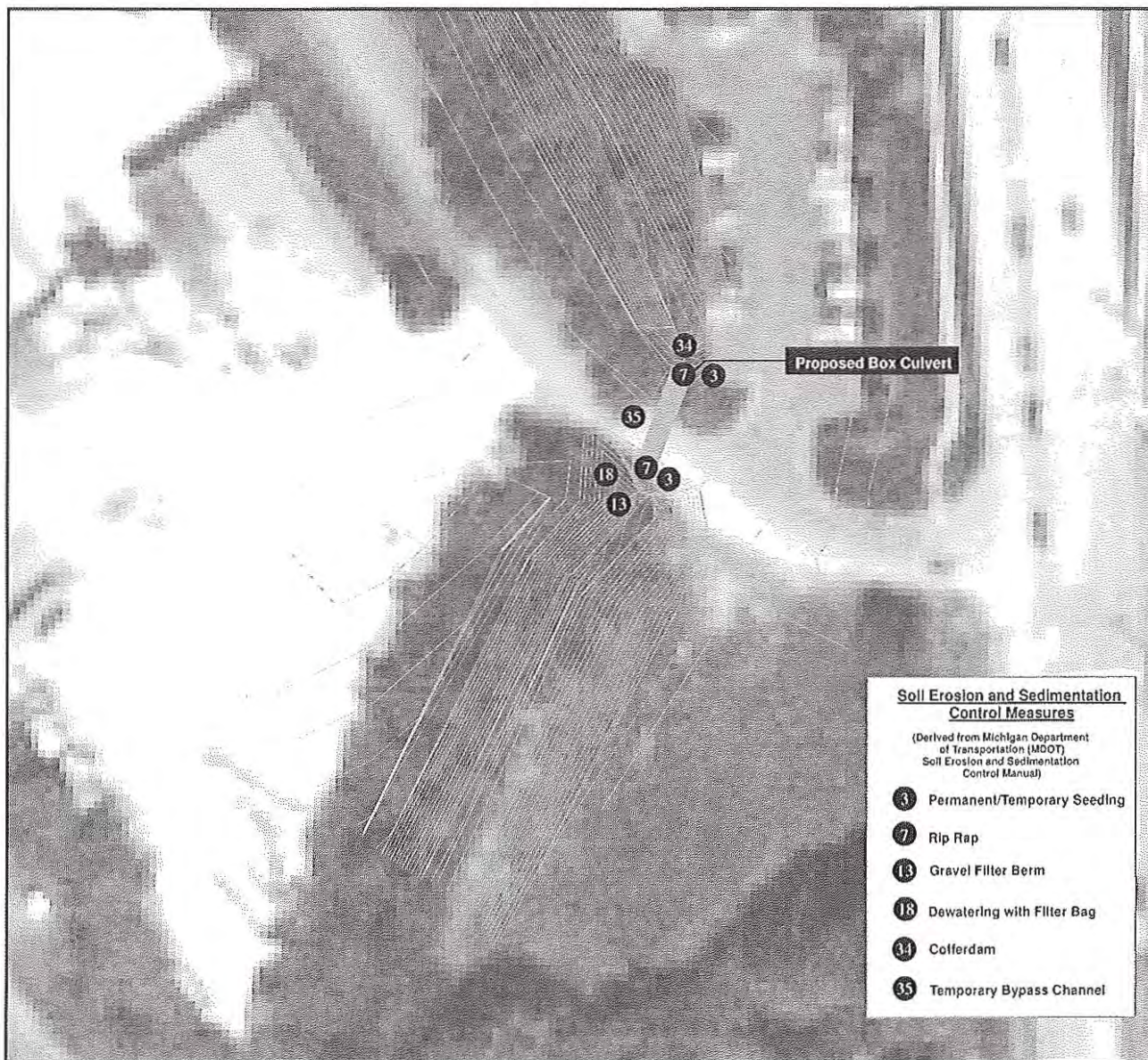


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Example. Dewatering Containment Area
Northwest Quadrant Ring Road and Industrial Spur
City of Novi, Michigan

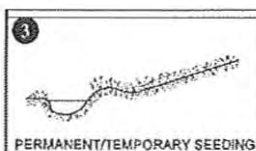
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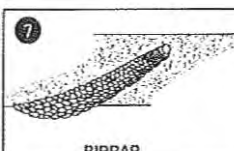
Soil Erosion and Sedimentation Control Measures

(Derived from Michigan Department of Transportation (MDOT) Soil Erosion and Sedimentation Control Manual)

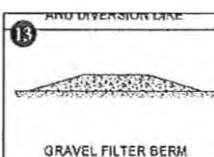
- ③ Permanent/Temporary Seeding
- ⑦ Rip Rap
- ⑬ Gravel Filter Berm
- ⑱ Dewatering with Filter Bag
- ③④ Cofferdam
- ③⑤ Temporary Bypass Channel



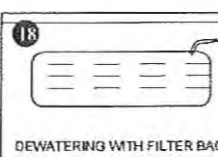
Inexpensive but effective erosion control measure to stabilize flat areas and mild slopes. Permits runoff to infiltrate soil, reducing runoff volumes. Proper preparation of the seed bed, fertilizing, mulching and watering is critical to its success.



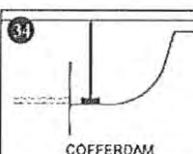
Used where vegetation cannot be established. Very effective in protecting against high velocity flows. Should be placed over a geotextile liner.



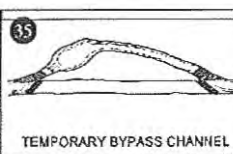
Useful in filtering flow prior to its reentry into a lake, stream or wetland. Works well with SEDIMENT TRAP (KEY 20) and TEMPORARY BYPASS CHANNEL (KEY 35). Not to be used in lieu of a CHECK DAM (KEY 37) in a ditch.



It may be necessary to dewater from behind a cofferdam or construction dam to create a dry work site. Discharged water must be pumped to a filter bag. A GRAVEL FILTER BERM (KEY 13) may be placed downslope of the filter bag to provide additional filtration prior to entering any stream or wetland.



Used to create a dry construction area and protect the stream from raw erodible areas. Must be pumped dry or dewatered according to DEWATERING WITH FILTER BAG (KEY 18).



Utilized when a dry construction area is needed. Isolates stream flows from raw erodible areas minimizing erosion and subsequent siltation. Can incorporate SEDIMENT BASIN (KEY 21), CHECK DAM (KEY 37), and GRAVEL FILTER BERM (KEY 13) to remove sediments from water. Construction sequence of events may be necessary.

Culvert Replacement Dewatering Plan
NORTHWEST QUADRANT RING ROAD AND INDUSTRIAL SPUR

City of Novi – Engineering Department

Created by: JPB, URS Project 12541940, August 7, 2009

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0 25 50 100 Feet