General Demolition & Removal Notes

1. All existing on-site structures, sidewalks, concrete or asphalt surfaces, curbing, utility poles, sewer structures, utility services, fences, trees, shrubs, and debris noted for removal on the drawings shall be demolished and removed from the site and properly disposed of all in a manner approved by the regulating governmental agencies.
2. Contractor shall be responsible for coordinating and providing all services and fees necessary to obtain the required building demolition permits and for fees by the various utilities associated with the disconnection and termination of their services.
3. Contractor shall be responsible for determining the amount of removals, demolition, clearing and grubbing, stripping of vegetation, pavement breaking, and haulo ff.
4. Contractor shall obtain all necessary state and local permits required for hauling and disposal of demolition, clearing, and non-suitable materials from the project site. Hauling methods and conditions of the permit shall be strictly adhered to.
5. Contractor shall preserve and protect all existing improvements (which are not to be removed) within the project limits or adjacent thereto from damage as a result of his activities in the performance of work.
6. Underground facilities, structures and utilities have been plotted from available surveys, records and information, and, therefore, do not necessarily reflect the actual existence, non-existence, size, type, depth, number or location of these facilities, structures and utilities. The Contractor shall be responsible for verifying the actual location of all underground facilities, structures and utilities, either shown or not shown on these plans. The underground facilities, structures and utilities shall be located in the field prior to any grading, excavation or construction of improvements. These provisions shall in no way absolve any party from complying with the Underground Facility Safety and Damage Prevention Act, Chapter 319, RSMo.
7. Contractor to verify location and flowline of all existing utilities prior to connection. All connections to be made in accordance with local codes and/or utility companies requirements.
8. Contractor to notify Engineer as soon as possible if conditions on ground differ from those shown on plans.
9. The original of these drawings are on file at the office of The Clayton Engineering Company. Any modifications to these drawings shall release said Clayton Engineering Company, the Engineer and/or the Surveyor whose seal appears hereon from any liability resulting from said unauthorized modifications.
10. Project Benchmark: P.K. Nail at the most Northern corner of the subject property. Elevation = 621.65' (adopted from Survey by George Butler Associates dated June 25, 1997).

Grading

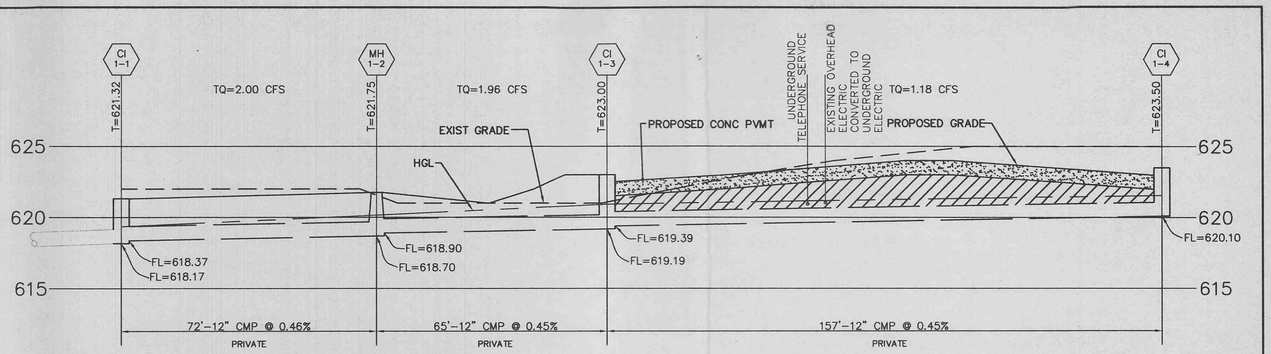
1. All grading shall be within 0.5 feet more or less of the contours shown on the grading plan, unless otherwise directed by the Owner or Engineer.
2. All fills are to be left with a temporary lip (berm) at the top of the slope at the end of each day's operations.
3. Any trees, brush, organic topsoil and other objectionable material remaining shall be removed and disposed of at an off-site location. Additional suitable fill material as needed shall be brought onto the site. Areas which are to be filled shall be compacted to a minimum density of 90% maximum density as determined by the Modified AASHTO Compaction Test, T-180-74 (ASTM D-1557) in the building and pavement area and 85% in other areas, or as set forth in a Soils Engineer's investigative written report setting forth the grading specifications and requirements.
4. Before filling, the Contractor shall thoroughly clean out and remove all objectionable material, organic material, rubbish and debris. Existing concrete and asphalt paving shall be broken up to a maximum dimension of 3 inches in size, and may be mixed with sufficient excavated soil to eliminate voids and disposed of in fill areas on the site, excluding areas that will be under building or utility construction.
5. During the excavation for footings, if any unsuitable soil is uncovered, the Contractor shall remove it and deepen the footings as necessary to build on clean soil.
6. The General Contractor shall be responsible for rough grading of all landscape areas. Grade to match top of proposed pavement elevation, not top of curb elevation. All areas shall be free of debris. Landscape Contractor shall be responsible for a minimum of 6" of topsoil in all landscape areas.
7. The developer is advised that utility companies will require compensation for relocation of their utility facilities within the public road right-of-way. Utility relocation cost shall be considered the developer's responsibility. The developer should also be aware of extensive delays in utility company relocation and adjustments. Such delays will not constitute a cause to allow occupancy prior to completion of road improvements.
8. Provide adequate off-street parking for construction employees. Parking on non-surfaced areas shall be prohibited in order to eliminate the condition whereby mud from construction and employee vehicles is tracked onto the pavement causing hazardous roadway and driveway conditions.
9. All storm water shall be discharged at an adequate natural discharge point.
10. Interim storm water drainage control in the form of siltation control measures are required.
11. All disturbed earth areas within right-of-way shall be sodded.
12. All offsite property owners shall be given notice 48 hours in advance of any work.
13. Any disturbed offsite property (i.e. bushes, fences, mailboxes, etc.) shall be replaced, in kind, at the developer's expense.
14. Damage to offsite streets and downstream properties due to soil erosion or siltation shall be prevented by erecting silt barriers or basins, or by utilizing similar devices to effect soil stabilization prior to the start of any grading operations.
15. All protective measures shall be installed downslope of every location where the original ground is to be disturbed.
16. Storm water pipes, outlets and channels shall be protected by silt barriers and kept free of waste and silt at all times prior to final surface stabilization and paving.
17. No slope shall be greater than 3:1 max.
18. Slopes steeper than 5 to 1 and all swales shall be protected by sodding or paving upon completion of construction or compaction. All other areas disturbed by grading operations to be protected by seeding and mulching as soon as possible.
19. Inspection of, and necessary repairs made, to the erosion and silt control measures must be made daily and/or following periods of precipitation.
20. If siltation basins are utilized, they shall remain functional until tributary area to each basin has been seeded or sodded and sufficient growth established to prevent erosion.
21. The Contractor shall assume complete responsibility for controlling all siltation & erosion of the project area. The Contractor shall use whatever means necessary to control erosion & siltation including, but not limited to, staked straw bales and/or siltation fabric fences (possible methods of control are detailed in the plan). Control shall commence with the grading and be maintained throughout the project until acceptance of the work by the Owner and/or the City of O'Fallon. The Contractor's responsibilities include all design and implementation as required to prevent erosion and the depositing of silt. The Owner and/or the City of O'Fallon may at their option direct the Contractor in his methods as deemed fit to protect property & improvements. Any depositing of silts or mud on new or existing pavement or in new or existing storm sewers or swales shall be removed after each rain and affected areas cleaned to the satisfaction of the Owner and/or the City of O' Fallon.

Storm & Sanitary Sewers

1. Face of all inlets to be set 2 feet behind back of curb and 3 inches above top of curb where 3" lip curbs are installed. Top of inlets shall be set flush with top of curb where 6" vertical curbs are installed.
2. All concrete pipe in proposed street right-of-way shall be reinforced concrete pipe and meet current A.S.T.M. Specification C-76 and shall be Class III unless otherwise noted on profiles.
3. Joints for concrete pipe shall be rubber gasketed meeting ASTM C-443 with a main sealing surface of no less than 3 inches.
4. All fill under storm lines constructed above original grade shall be compacted to 90% of maximum dry density as determined by the modified AASHTO Compaction Test T 180 (Current A.S.T.M. Specification D-1557), and verified by a Soils Engineer prior to installing pipe.
5. Location and elevation of field inlets, manholes and culvert pipes to be verified by Engineer after stakeout and prior to construction.
6. All "on-site" storm sewer will remain privately owned and maintained.
7. All materials and fabrication shall be in accordance with AASHTO Specification M-36. All installation shall be in accordance with the manufacturer's specifications.
8. The Collection Piping shall be fabricated from 16 gauge Galvanized Coated Steel Coils meeting the requirements of AASHTO Specification M-218. All materials and fabrication shall be in accordance with AASHTO Specification M-36. Each pipe end shall have at least two annular corrugations to accept Strip Gasket and a connecting band. Connecting bands shall have two corrugations that engage the annular corrugations on the ends of the pipe. Bands shall be joined by band angle and strap connectors (or approved equal.) All installation shall be in accordance with the Manufacturer's recommendations.
9. All materials and methods of construction for sewers to meet the latest requirements of the City of O'Fallon, Missouri and St. Charles County Plumbing Code.
10. Manhole frames and covers shall be standard frames and cover, Frame No. B-1113, Cover No. B-1114, as manufactured by Tower Grove Foundry, or equivalent, approved by the Engineer.

Streets and Paving

1. All materials and methods of construction for streets to meet the requirements of the City of O'Fallon, Missouri and the State of Missouri.
2. All trenches under, or adjacent to proposed pavement shall be backfilled to subgrade elevation with compacted 3/4" minus crushed limestone. Crushed limestone shall be compacted to 90% density as determined by the Standard Proctor Test AASHTO T-99 (ASTM D-698). All other trenches within the road right of way shall be backfilled with suitable earth embankment material free from rubbish and debris and lumps, clods or rocks larger than 2, inches placed in 6" layers and compacted to the same density as above. Trenches not in road right-of-way or under or adjacent to pavement may be backfilled with earth embankment material defined above, jetted and neatly mounded to allow for subsequent settlement, unless otherwise directed by the Engineer.
3. Entire Right-of-Way shall be graded and compacted prior to paving. All fill in the right-of-way and the upper 18 inches of subgrade in cut areas where deemed necessary, shall be compacted. Shoulders shall be backfilled, compacted and shaped to finish grade as soon as curbs are in place and sufficiently set to remove forms.
4. Subgrade for pavement shall be compacted with a self-propelled steel wheel roller weighing not less than 10 tons. Pavement shall consist of 7.5" Type 'X' Asphaltic Concrete Base course with a 2" Type 'C' Asphaltic Concrete surface course. The base course shall be placed in two or more layers of approximately equal thickness, rolled and compacted using not less than a 10 ton two wheel roller . The surface course shall be spread in a single layer, rolled and compacted using not less than a 10 ton two wheel roller.
5. Type D joints will be required for all concrete pavement terminations at the end of a working day.
6. Prior to grading within existing right-of-way, the Contractor shall request inspection from the City of O'Fallon Department of Public Works.
7. All materials and methods of construction for the entrance on Veteran's Memorial Parkway to meet the requirements of the City of O'Fallon, MO. Concrete pavement shall be 8" concrete with 6 x 6 x 6 steel mesh on a 4" stone base with concrete curb and gutter. Entire subgrade shall be shaped, compacted and rolled prior to placing base course. Local soft spots in subgrade encountered during pavement construction shall be undercut and replaced with a thicker rolled stone base section.
8. Contractor shall guarantee paving for one year after final completion of construction against settlement, low spots or raveling out of surface. Make any repairs necessary during guarantee period to maintain paving in original condition, including cost of repainting within repaired areas. Repairs shall include but not be limited to removing defective paving and replacing with new paving. (No overlays will be allowed).
9. All sidewalks, curb ramps, ramps and accessible parking spaces shall be constructed in accordance with the current approved "American with Disabilities Act Accessibility Guidelines (ADAAC) along with the required grades, construction materials, specifications and signage. If any conflict occurs between the above information and the plans, the ADAAC guidelines shall take precedence and the Contractor prior to any construction shall contact the Project Engineer.
10. Saw cut & smooth edge for all pavement jointing shall be preserved.
11. The Contractor shall repair any damage to the existing pavement that results from new construction.



Description = QT 662
System Number = 1
Return Period (yr) = 25
Rainfall Duration (min) = 20
Runoff Factor Multiplier = 1.00
Starting HGL Elev. (ft) = 619.17
Use St. Louis Co./MSD Losses? = Y

STRUCTURES UPR/LWR	FLOWLINES UPR/LWR	DIAM/ ANGL	LENGTH#/ CURVES?	n	AREA/ PI	Qadd	Qtotal/ Qfull	ConS/ ReqdS	Yn/ Yc	PARTIAL V/Y	FULL V/Vhead	LOSSES F/C	LOSSES V/T	COND UP/LWR	HGL UPR/LWR	UPPER STR TOP/FREEBD
CI 1-4	620.10	12	157	0.024	0.29	1.18	1.18	0.45	0.75	1.50	1.50	0.58	0.05	FP	621.57	623.50
CI 1-3	619.39	45	N		4.08		1.30	0.37	0.46	1.55	0.04	0.00	0.00	FP	620.94	1.93
CI 1-3	619.19	12	65	0.024	0.17	0.76	1.96	0.45	1.00	2.50	2.50	0.67	0.10	FP	620.94	623.00
MH 1-2	618.90	11	N		4.48		1.30	1.03	0.60	1.26	0.10	0.00	0.01	OF	620.16	2.06
MH 1-2	618.70	12	72	0.024	0.01	0.04	2.00	0.46	1.00	2.55	2.55	0.77	0.01	FP	620.16	621.75
CI 1-1	618.37	0	N		4.45		1.31	1.07	0.60	1.00	0.10	0.00	0.01	OF	619.37	1.59

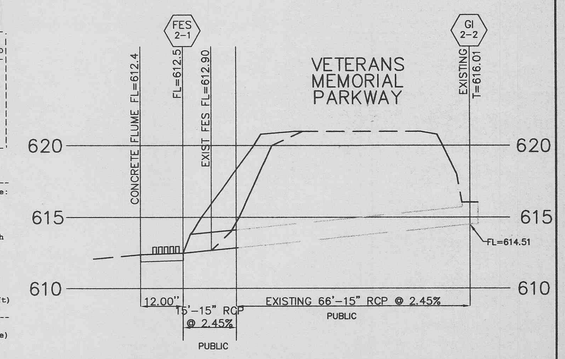
LEGEND

UPR - At upper end of pipe
LWR - At lower end of pipe
DIAM - Pipe diameter (in)
ANGL - Downstream deflection (deg)
LENGTH - Pipe length (ft)
CURVES - Curves in pipe?
n - Manning's roughness factor
AREA - Upper drainage area (ac)
PI - Runoff factor (cfs/ac)
Qadd - Added flowrate (cfs)
Qtotal - Total flowrate (cfs)
Qfull - Pipe full capacity (cfs)
ConS - Construction slope of pipe (%)
ReqdS - Minimum required slope (%)

Yn - Normal depth (ft)
Yc - Critical depth (ft)
PARTIAL - Conditions at lower end of pipe
FULL - Conditions assuming full pipe flow
V - Velocity (fps)
Y - Depth (ft)
Vhead - Velocity head (ft)
LOSSES - Major and minor head losses
F - Friction in pipe (ft)
C - Curve in pipe (ft)
V - Velocities in upper structure (ft)
T - Turns in upper structure (ft)

COND - Flow condition code at each end of pipe:
FP - full pipe flow
OC - open channel flow
ND - set to normal depth
CD - set to critical depth
OF - initially set to open channel depth then set to full pipe flow
OJ - open channel flow but hydraulic jump will occur downstream
HGL - Hydraulic grade line elevation (ft)
TOP - Elevation of top of upper structure (ft)
FREEBD - Difference btwn upper HGL and TOP (ft)

Notes:
1. Friction losses computed with Manning's formula if full pipe flow or back-calculated if open channel flow (simulating flow profile)
2. HGL at upper structure includes structure losses calculated with actual inflowing velocities using iterative procedure
3. Velocity and turn structure loss components only computed for incoming pipes with invert elevations below outlet crown elevation



3	3/12/02	HRL	CITY COMMENTS
2	2/11/02	HRL	PROFILE
1	1/31/02	HRL	WIDENED PARKING AISLE & MOVED CI-4

REVISIONS

SEWER PROFILE & GENERAL NOTES

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STATE OF MISSOURI JAMES VELLOFF NO. E-2002161582 05 Apr 02

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Designed DJB, MJV
Drawn HRL
Checked DJB, MJV
Date 11/13/01
Project Number 97216
Sheet Number 7 of 12

F.S. F.B. SUR. FILE: N:\97216\PLANS\DETAILS07.DWG PLOTTED: 03/13/02 07:12 BY: HRL