SUMMARY OF CHANGES TO DESIGN GUIDELINES AND TECHNICAL STANDARDS

VOLUME FY16 NUMBER 2 – MAY 1, 2016

This document identifies all content changes to the Design Guidelines and Technical Standards from the Volume FY16 Number 1 – October 15, 2015 version. It does not identify any formatting changes, typographical corrections, or renumbering of sections within the different individual documents.

Table of Contents

DESIGN GUIDELINES ................................................................................................................................. 2
DIVISION 0 .................................................................................................................................................. 4
DIVISION 1 .................................................................................................................................................. 5
DIVISION 2 .................................................................................................................................................. 7
DIVISION 3 .................................................................................................................................................. 7
DIVISION 4 .................................................................................................................................................. 7
DIVISION 5 .................................................................................................................................................. 7
DIVISION 6 .................................................................................................................................................. 7
DIVISION 7 .................................................................................................................................................. 8
DIVISION 8 .................................................................................................................................................. 8
DIVISION 9 .................................................................................................................................................. 9
DIVISION 10 ............................................................................................................................................... 10
DIVISION 11 ............................................................................................................................................... 12
DIVISION 12 ............................................................................................................................................... 13
DIVISION 13 ............................................................................................................................................... 14
DIVISION 14 ............................................................................................................................................... 14
DIVISION 21 ............................................................................................................................................... 14
DIVISION 22 ............................................................................................................................................... 14
DIVISION 23 ............................................................................................................................................... 15
DIVISION 26 ............................................................................................................................................... 17
DIVISION 27 ............................................................................................................................................... 19
DIVISION 28 ............................................................................................................................................... 19
DIVISION 32 ............................................................................................................................................... 20
DIVISION 33 ............................................................................................................................................... 22
Blue Stake Procedure ................................................................................................................................. 23
DESIGN GUIDELINES

1. Updated Footer for Current Date
2. Page 5 – changed contact for changes to Stephanie.bauer@nau.edu.
3. Page 11 – changed Affirmative Action to Equity and Access
4. Page 36 – Added:
   “Waste Management: Northern Arizona University is working to quantify waste and recycling rates for all ongoing and any future projects on campus. Contractors are asked to identify waste diversion opportunities and track waste and recycling figures for each of their respective projects. Waste and waste diversion totals should be tracked on a monthly basis and entered into the project-specific spreadsheet. “
5. Page 37 – Added:
   “Preliminary Water Budget Analysis:
   Perform a preliminary water budget analysis before the completion of schematic design that explores how to reduce potable water loads in the building and accomplish related sustainability goals. Assess and estimate the project’s potential non-potable water supply sources and water demand volumes, including indoor water demand, outdoor water demand, process water demand, and supply sources. Non-potable water source evaluations can include on-site rainwater and/or graywater, and HVAC equipment condensate.

Document how the above analysis informed building and site design decisions in the project’s BOD. Demonstrate how at least one on-site non-potable water supply source other than reclaimed water was analyzed to reduce the burden on municipal supply or wastewater treatment systems by contributing to at least two of the water demand components listed above.”
6. Page 39 – Added:
   “INTEGRATIVE PROCESS
   • Credit – Integrative Process
   Perform a simple box energy modeling analysis and a preliminary water budget analysis before the completion of schematic design. Use the analyses to inform the basis of design (BOD), design documents, and construction documents.”
7. Page 40 – 46: Deleted the specific LEED credit numbers
8. Page 41 – Credit Heat Island Effect: Roof, added “and/or Non-Roof” to title and Added: “...And/Or
   Consider compliance options such as the use of paving materials with a three-year aged solar reflectance (SR) values of at least 0.28, and/or providing shade through the use of architectural structures, vegetated structures, or energy generation systems.”
9. Page 42 – Indoor Water Use Reduction – Added:
   “Appliance
   Install appliances and equipment within the project scope that meet the requirements listed below:
   Residential Clothes Washers: ENERGY STAR or performance equivalent
   Residential Dishwashers (standard and compact): ENERGY STAR or performance equivalent
   Ice Machine: ENERGY STAR or performance equivalent and use either air-cooled or closed-loop cooling, such as chilled or condenser water system”
10. Page 42 - 43 – Advanced Metering...Added:
“to identify the benefit of installing permanent water meters for **two or more** of the following water subsystems, as applicable to the project: irrigation; indoor plumbing fixtures and fittings; domestic hot water; reclaimed water; boiler; and/or other process water.

In addition, coordinate with Associate Director of Utilities to identify the benefit of metering for individual energy end uses that represent 10% or more of the total consumption of the building.”

11. Page 43
Minimum Energy Performance,
Added: “prerequisite for minimum energy performance”
Deleted, “both mandatory and the prescriptive requirements of ASHRAE 90.1-2010 and demonstrate at least a 1% improvement from the ASHRAE baseline. Proof of compliance will be based on data output from LEED approved computer load/energy estimating programs only.”

Building Level Energy Metering, added:
“The Owner will commit to sharing with USGBC the resulting whole-project water usage data for a five-year period beginning on the date the project accepts LEED certification or typical occupancy, whichever comes first.”

Added: “Consider interior lighting quality strategies such as luminesce, lighting positioning, and color rendering index (CRI).”

   a. Deleted: “Omni-lock” and added, “SCHLAGE CO-200 Series”
   b. Added: “It shall be located in a safe area accessible to all.”

14. Page 95 – Under 1. Equipment,
Deleted, “Current departments/areas that could be models for a standard configuration: School of Communication, Engineering, Health and Learning Center (HLC) classrooms, WA Franke College of Business classrooms, and Hotel and Restaurant Management.”
Added under 1.1 Tier 1...: “EuroDesigns Lectern MPD48EAR-NAU-CPHR is preferred.”

15. Page 97 –
   3. Network Requirements – deleted “the webcam” from the list for wired data connections.
   4. Teaching Station – deleted AMX & Extron, as NAU used control systems.

16. Page 98 – Mediation Packages, 5.1 Capacity...” - Deleted Slide Projector from list
DIVISION 0

1. Updated Header to be changed from “Division 0 – Bidding Requirements Contract Forms and Conditions” to “Division 0 – Procurement and Contracting Requirements”.
2. Updated Footer for Current Date
3. On the Table of Contents, added “00 73 19 Health and Safety requirements”.
4. 00 11 13 – Deleted “Administrative Services” and Added Work Control Center” in two spots.
5. 00 21 13.1 – Added “Attn: Stephanie Bauer” and “Stephanie.bauer@nau.edu”
6. 00 41 13 – Bid Form – Change “Alternate Bid Group” to “Additive Alternate” throughout the section.
7. 00 43 36 – Subcontractor List – FS #3 – Deleted a blank page of subcontractor’s list.
8. 00 62 23 – Added “The FS 49 Construction Waste Tracking Log is located online at: http://nau.edu/Facility-Services/Planning/Forms-Index/”
9. 00 73 19 Health and Safety Requirements – Added this section.
   Beginning July 1, 2016, the use of all tobacco products, including those not approved by the FDA for cessation is prohibited on university property, facilities, grounds, parking structures, privately-owned vehicles and structures owned or leased by the University. This includes, but is not limited to, the use of cigarettes, e-cigarettes, hookah, e-hookah, chew, dip, snuff, cigars, pipes, vaporizers, etc.
DIVISION 1

1. Updated Footer for Current Date
2. Deleted unused Divisions from Table of Contents and throughout document.
3. 01 18 13 – Added: “...description and procedure for each task...” and deleted “...within the procedure”;
   Added: “NAU trade supervisor”
   Added: “...utility distribution or internal”
4. 01 22 00 Unit Prices – added
5. 01 23 00 Alternates - added
6. 01 32 23 Survey and Layout Data:
   Deleted: Project Manager to determine if all underground utilities exposed by their project will be
   located and documented by GPS.
   Added: All underground utilities shall have GPS points taken and indicated on the as-builts. Points shall
   include any connections, valves, bends, rises/falls and points where other utilities are crossed. In the
   event that existing utilities are exposed during construction then 1 GPS point will be taken for every 10’
   of exposed surface in addition to any connections, valves, bends, rises/falls and points where other
   utilities are crossed.
7. 01 35 53 – Security Procedures
   Deleted: “After hours and...”; ”...coordinated with NAU Project Manager and NAU PD”
   Added: “...in accordance with 01 41 19 Rules”
8. 01 41 16 –
   Deleted: The Contractor is required to pressure wash blue stake marks at the end of the excavation phase
   and/or at the end of a project in a manner that does not damage finished surfaces.
   Added: Contractor shall remove the blue stake marks outside of the fenced area at the end of the
   excavation phase for projects in a manner that does not damage finished surfaces, if it is more than a
   month prior to substantial completion. All projects will remove blue stake marks at substantial
   completion in a manner that does not damage finished surfaces.
9. 01 41 19 - Added:
   The tunnels on campus are generally considered a non-permit required confined space. However,
   conditions may change without our knowledge. Prior to entry contractors must supply their own
   atmospheric tester/monitor, complete an NAU Confined Space Entry Checklist, and submit this to their
   safety officer and the NAU project manager. If through utilization of the checklist the area is to be
   considered a confined space then the contractor is responsible for their confined space safety program.
   This must be submitted to the NAU project manager for documentation.

   No one may enter the tunnel system alone. Anyone entering the tunnel system must make contact with
   the appropriate plant operator to provide the section of tunnel being accessed, time of entry, purpose of
   work and approximate time frame. Contact must be made with the appropriate plant supervisor when
   leaving the tunnels as well.

   The entry checklist can be found at:
   http://nau.edu/uploadedFiles/Administrative/Research/Compliance/Environmental_Health_and_Safety/
   _Forms/NAUentrychecklist.pdf
10. 01 74 19 Construction Waste Management and Disposal, Added:
“The Contractor will identify waste diversion opportunities and track waste and recycling figures for each of their respective projects. Waste and waste diversion totals should be tracked on a monthly basis and entered into the project-specific spreadsheet.”
DIVISION 2
1. Updated Footer for Current Date

DIVISION 3
1. Updated Footer for Current Date

DIVISION 4
1. Updated Footer for Current Date

DIVISION 5
1. Division was Reformatted into 2014 CSI Master Format
2. Updated Footer for Current Date
3. 05 41 00 – Structural Metal Stud Framing
   Deleted “In general, 25 gauge studs are acceptable at 16” centers for walls not exceeding 10’ in height. After 10’, 20 gauge studs must be used. Specification of 25 gauge studs is preferred on smaller “task order” type jobs, due to availability and cost issues.” “After 10’, 20 gauge studs must be used.”
   Added:
   NAU requires all new construction to follow the requirements of the 2009 ICC International Building Code, Chapter 22, STEEL.

   In addition, all wall framing to follow the following:
   - Walls up to 10’ cold rolled studs to be 25 gauge.
   - Walls over 10’ to 14’ cold rolled studs to be 20 gauge.
   - Walls over 14’ cold rolled studs to be 16 gauge.
   - All wall studs to be minimum 16” on center.

   Additional standards for cold formed stud walls as cited in the IBC are: AISI S211 or AISI S100.
4. 05 50 00 – Metal Fabrications
   Added – visually “or physically” impaired...
   Deleted = “and physically handicapped”

DIVISION 6
1. Division was Reformatted into 2014 CSI Master Format
2. Name was changed from Division 6 – Wood and Plastics to Division 6 – Wood, Plastics, and Composites
3. Updated Footer for Current Date
4. 06 20 23 – deleted “equal to Corian” and added “a solid surface,”
DIVISION 7

1. Updated Footer for Current Date
2. Moved Firestopping from Division 10 to 07 84 00
3. 07 84 00 Part 2 Acceptable Manufacturers.
   Deleted, “Provide products from the above acceptable manufacturer/s; no substitutions will be accepted.”
   Added, “3. Or approved equal, as approved in writing from Owner”.

DIVISION 8

1. Division was Reformatted into 2014 CSI Master Format
2. Name changed from Division 8 – Doors & Windows to Division 8 – Openings.
3. Updated Footer for Current Date
4. 08 70 00, 2.12 Surface Closers – A.
   Added:
   “2. Allegion LCN 4040XP-EDA-TBWMS-ALUM closers must be installed by through-bolting the closer (with sexnuts) to the door with 1/4-20 hardware. The closer shoe must be attached to the frame by all five mounting points. In the case of aluminum frames, the shoe must be attached with 1/4-20 nutserts (aka rivetnuts) installed in the frame and using LCN 4040-61 Blade Stop Spacers. If necessary due to inadequate jamb reveal, the fifth attachment point will be accomplished by using LCN 4040-30 Cush Shoe Supports.

Frames shall be the following or approved equal:

![Frame Support Diagram]

**CUSH SHOE SUPPORT, 4040-30** provides anchorage for fifth screw used with CUSH arms, where reveal is less than 3 1/16” (78 mm).

**BLADE STOP SPACER, 4040-61** required to lower parallel arm shoe to clear 1/2” (13 mm) blade stop.

Deleted: “3.6 Door Hardware Schedule”
DIVISION 9

1. Updated Footer for Current Date
2. 09 65 19 Resilient Tile Flooring
   Deleted: “Vinyl Composition...” to Part 1 General
   Added: “Product should be scratch-resistant.” to Part 2 Products
3. 09 68 00 Carpeting
   Added: To Part 1 General – 8th paragraph, “Carpet tile with lower recycled content may be accepted if it can be verified as compliant with material health protocols such as Cradle to Cradle or Living Building Challenge.”
   Changed: To Part 2 Products – Yarn: Changed 6.6 to “6 or 6.6”.
   Deleted: “For fast procurement, the University pre-approved the following manufacturers:
      • Carpet Tile: Interface Floor, Tandus Flooring, Mohawk Industries
      • Broadloom: Atlas Carpet Mills, Tandus Flooring, Mohawk Industries
   To verify minimum performance specifications have been met or to submit substitution requests, please NAU Project Manager.”

4. Added:
   09 97 00 Special Coatings
   09 97 35 Dry Erase Coatings
   Dry Erase Coatings, also known as white board paint, is not authorized by the University Paint Shop. The use of physical white boards/fixed dry markerboards is recommended and detailed in the Design Guidelines and Division 10.
1. Updated Footer for Current Date
2. Reformatted into 2014 Masterformat
3. Moved Firestopping section to Division 7 (formerly 10523).
4. 10 11 00 – Visual Display Units
   General
   Deleted: “chalk”
   Deleted: One eraser and four map clips shall be included with every 8’ of marker board.
   Added: “and one eraser” and “Map clips are optional, depending on the user’s needs.”
5. 10 11 16 Markerboards
   Added: Dry “erase” markerboards, “also known as white boards,”…;
   Added: “Environmental ceramic-steel surface with controlled, continuous coil-coating, and ceramic finish fused to a steel core.”
   Added: …for example glass boards “and porcelain boards,”…
   Deleted:
   “Porcelain boards, a face sheet of 24 gauge enameling grade steel, with a three coat porcelainize process, a writing coat greater or equal to 0.0025”.
   The core material shall be Cortron ½" thick industrial grade particle board complying with ANSI A208.1, Grade 1-M-1.
   Backing sheet shall be 0.015" aluminum. Laminating adhesive shall consist of moisture resistant thermoplastic adhesive.”
   Changed: “Porcelain boards, a face sheet of 24 gauge enameling grade steel, with a three coat porcelainize process, a writing coat greater or equal to 0.0025” to “Environmental ceramic-steel surface with controlled, continuous coil-coating, and ceramic finish fused to a steel core.”
6. 10 14 16 Plaques
   Deleted: “Two comparative sources for metal building plaques are:
   Metal Decor Tel.- 1-800-637-8591 (Referred by University Development)
   PMA Aero Etch Tel. 1-602-863-0133 (Referred by University Development)”
   Deleted “Management Team”
7. 10 21 13.13 Metal toilet Compartments – Changed as follows:
   Original:
   Metal Compartments:
   • Ceiling-hung (University preference for ease of cleaning)
   • Floor-supported
   • Metal partitions shall not be painted metal
   Revised:
   Metal Compartments:
- Floor-to-ceiling or floor-to-wall mounting preferred
- Metal partitions shall not be painted
- Stainless steel textured partitions are acceptable. Stainless steel smooth partitions are not acceptable.

8. 10 21 13.16 Plastic-laminate-clad Toilet Compartments – Changed as follows:

**Original:**
Plastic Laminate Toilet Compartments

- Ceiling-hung (University preference for ease of cleaning)
- Floor-supported

**Revised:**
Plastic Laminate Toilet Compartments

- Floor-to-ceiling or floor-to-wall mounting preferred
- A random pattern is preferred to solid colors (to extend time when discoloration from repetitive cleaning becomes obvious). Sample patterns are:
  - Wilson Art: Agean 1762-60, or Storm Nebula 4634-60 or
  - Pionite: Suede Rose Chromatix AR221-S

High-Density Polyethylene (HDPE) Toilet Compartments
- Scranton Hiny Hiders or Equivalent

9. 10 28 13 Toilet Accessories—

Changed 1. From Kimberly Clark to Georgia Pacific Push Paddle.
Changed 2. From Cormatic to Waxie Twin Roll.
Changed 3. Soap Dispensers to foam Waxie
Changed 4. From stainless steel to reviewed and approved by PDC.
Added: 5. Disposable toilet seat covers and dispensers shall not be installed.
Changed 6. Moved Sanitary Napkins to end, and said they should not be installed.
DIVISION 11

1. Reformatted to 2014 Masterformat for CSI Divisions.
2. Updated Footer for Current Date
3. Moved 11 44 00 to 23 38 13
4. Added 11 81 00:

Following is a list of the typical housekeeping equipment to be ordered for custodial services on new construction projects. The final list for each project is to be reviewed and approved by NAU Project Manager and Custodial Supervisor. Owner will procure these items.

- ADVANCE SC500 X20D 20" Walk Behind Scrubber W/130AH Wet Batteries.
- Windsor Titan Tip ’n Pour Wet/dry Vac 20gl w/hose & tool kit. Features powerful 1.5 hp vacuum motor and rugged construction to provide years of dependable operation. The Windsor Titan 20 gallon offers the added convenience of an optional squeegee attachment for faster large area wet pick-up. Every Titan wet/dry vacuum comes standard with an eight-piece tool kit to increase cleaning versatility.
- Rubbermaid Executive 32-gallon Brute Container, black
- Rubbermaid Executive Brute Caddy Bag, black
- Rubbermaid Executive Brute Dolly with quiet casters
- Viper Venom 20" 175 RPM 1.5 HP Floor Machine including pad driver
- Unger Speed Clean™ Window Kit. Drip-free indoor window cleaning. Quick and easy for hard to reach areas. No water spills or drips on window sills, frames, carpets and furniture. Clean in one simple step (no squeegee required), windows dry streak-free.
- 6112-77 RM Caution Wet Floor Sign, 25”
- WAXIE Versa High Performance Cleaning Caddy
- Deluxe Carpet Extraction Dual Jet Wand
- Rubbermaid Executive Janitor Cleaning Cart w/Locking Cabinet & Trash Cover.
- Rubbermaid Executive Collection 34 gallon Vinyl Cart Bag, Black.
- AQUACLEAN 18FLX CARPET EXTRACTOR
- VERSAMATIC 18IN
- ICAPSOL MINI DELUXE
- PROBLITZ XP AIR MOVER
DIVISION 12

1. Updated Footer for Current Date
2. Deleted unused divisions
3. 12 56 33 Classroom Furniture
   Added: Refer to current Design Guidelines.
4. 12 56 39 Lecterns
   Added:
   Instructor Station
   Refer to current Design Guidelines.
5. 12 56 52 Audio-Visual Furniture
   Added: Refer to current Design Guidelines.
6. 12 93 23 Trash and Litter Receptors
   Deleted: “Large common area or hallway bins should be the standard lobby units depicted below.”
   Deleted: Landfill “materials”; Also, “nau.edu/recycling” should be displayed on the front of the bin below
   the symbol.
   Deleted: “Bins used for the pilot program are Max-R Tuscany Sideload Double Recycling Stations.”
   Added:

   **Lobby Unit “Recycling and Trash Standards”**
   These standards are intended to create a unified and consistent recycling and landfill waste system on campus. **All final designs must be approved by the Office of Sustainability.**

   **Shape of Unit:**
   - Unit is to be rectangular in shape and “Landfill” and “Recycling” sections should be connected so that the unit is one dual unit.
   - Left side is “Landfill” and right is “Recycling.”
   - The unit will be front loading with rectangular openings.
   - Unit HxWxD should not exceed 46”x43”x21”.

   **Liners, Capacity, & Other:**
   - Each side will have approximately 32 gallons of capacity.
   - Liners will accommodate a 38x58 flat cut bag.
   - Front of unit will open on each side to give access for servicing.
   - Units must be constructed with a majority of post-consumer recycled content.

   As an example, previous manufacturers that have been used were Clean River and Max-R. **All final designs must be approved by the Office of Sustainability.** This is an Owner furnished item. The mini-bin size should be 1.5 L or 0.4 gallons.

   Changed: Example photos were updated.
   Changed Manufacturer Numbers of
   Added: The mini-bin size should be 1.5 L or 0.4 gallons. This is an Owner furnished item. All final designs must be approved by the Office of Sustainability.
DIVISION 13
1. Updated Footer for Current Date
2. Reformatted to 2014 Masterformat.
3. 13 20 00 – changed reference to 11 32 00. Removed “Porcelain” from Custodial Closets.

DIVISION 14
1. Updated Footer for Current Date

DIVISION 21
1. Added a Table of Contents
2. Updated Footer for Current Date
3. 21 00 00
   Added: PLEASE REFERENCE THE NAU FIRE MARSHAL WEBSITE FOR FURTHER INFORMATION
   http://nau.edu/Facility-Services/Operations/Office-of-the-Fire-Marshal/
   Changed: a. “alarm system” to “fire suppression”
   Changed: b. “alarm system” to “fire suppression”
4. 21 22 00 CLEAN-AGENT FIRE EXTINGUISHING SYSTEMS
   Added: “System designer – Fire suppression system plans and specifications shall be developed in accordance with NFPA 2001 by persons who are experienced in the proper design, application, installation, and testing of clean agent fire suppression systems.

   System installer – installation personnel shall be supervised”
   Deleted: “System Designer: Fire suppression system plans and specifications shall be developed in accordance with NFPA 2001”
   Changed: a. “alarm system” to “fire suppression”
   Changed: b. “alarm system” to “fire suppression”

DIVISION 22
1. Updated Footer for Current Date
2. 22 40 00 Plumbing Fixtures: Lavatory faucets:
   Added: “0.5 gallons per minute”
DIVISION 23

1. Updated Footer for Current Date
2. Moved 11 44 00 to 23 38 13
3. 23 00 00:
   Part 1
   Added:
   Buildings shall be designed based on the ASHRAE 99% design criteria for Flagstaff; Any freeze protection designs shall use -20 as the minimum temperature.
   Deleted: Design High Temperature and Design Wet Bulb Temperature.
4. 23 05 19: Deleted – Output of energy meter shall be in lbs/hr with pressure/temperature compensated conversion to BTU and totalized in MBTU’s.
5. 23 05 93: Deleted, “Specify that…”
6. 23 09 00:
   Part 1
   Changed setpoints from 72 to 69 and 76 to 75
   Part 2
   Added: “When specified in the design package, the”...
   Added: “Wireless access is to be provided in mechanical and electrical rooms for technician access to the campus head end."
   Part 3
   Added: “The controls contractor shall be a first tier sub to the General Contractor.”
   Added: “or commissioning agent”
7. 23 21 13: Pipe Gasketing
   Changed from Water Services to “Steam and High Temperature Hot Water Services”
   Changed from Garlock to “Flexitallic gaskets or equivalent”.
   Added: “Dialectric unions shall be installed whenever joining dissimilar metals.”
   Deleted: “Spiral wound metallic for high temperature hot water, steam and condensate”
   Part 3
   Added: on the NAU Facility Services Backflow Testing form
8. 23 21 13: Added: Dielectric unions shall be installed whenever joining dissimilar metals.
9. 23 22 13: Part 2. Pipe Gasketing - Steam services – Spiral wound
   Added: “Flexitallic or equivalent.”
10. 23 34 16: Deleted: “The University prefers that”.
11. 23 52 00:
    Part 1
    Added: A full life cycle analysis is to be submitted for the University’s evaluation prior to approval. This analysis shall include all expenses including equipment purchase and anticipated replacement costs, maintenance, replacement, and disposal costs, and anticipated costs of energy and water. The efficiency of equipment shall be calculated, and used in the life cycle cost analysis, for all expected
load ranges. Rates used in life cycle cost analysis shall be actual demand and consumption costs, not "average" costs. These can be requested from the NAU Director of Utility Services.

12. 23 62 00:
   Part 1
   Added: These can be requested from the NAU Director of Utility Services.
DIVISION 26

1. Updated Footer for Current Date
2. 26 05 19
   Added:
   Minimum wire size for exterior lighting shall be #10 AWG.
   Type MC Cable shall be used only for light fixtures not rigidly supported.
   Deleted:
   when approved by the NAU Project Manager and NAU Electrical Shop for specific uses on a particular project.
3. 26 05 33 – Deleted
   Depending on project size and cost considerations, NAU may consider the following conduit colors (factory- or field-painted, or color & text labeled every 10’ and at changes of direction):
   Silver – power and lighting
   Orange – security systems
   Yellow – data and telephone
   White – controls
4. 26 27 26 added: Motion sensors shall be equipped with a toggle sensor.
5. 26 51 00
   Part 1
   Added: Lighting fixtures shall utilize lamps that match the campus standards; added Phillips as a product;
   Deleted:
   Standardize lamp types across fixture types to limit the number of different lamp types and wattages used; and HID;
   For metal halide fixtures, specify pulse-start ballasts with end-of-lamp-life cutouts, and pulse-start lamps with glass or ceramic arc tubes. Probe-start ballasts and lamps are not acceptable; or cold-start fluorescent lamps and ballasts;
   **LED is preferred for parking garages.**
   Before specifying any fixtures utilizing HID lamps verify lamp replacement cost. Any fixtures requiring lamps costing more than $15.00 shall require prior approval by the NAU electric shop; Incandescent fixtures shall only be allowed when specifically authorized in writing by the NAU Project Manager;

   Part 2
   Added: Lighting within mechanical rooms, electrical rooms or above ceilings shall not be connected by electrical cord.
   Deleted: Compact fluorescent lamps in twin-, tri-, and quad-tube T4 configurations are allowed.
   **Changed:** Changed “Only Use” to “Utilize” for WAGO Lumi-nuts disconnects
6. 26 56 00
Added: A concrete pull box is to be installed next to the base of each light pole. Street lighting circuits shall be 2” PVC conduits from box to box; 3 phase contactors, a;

Changed: Changed 1” to 2” conduits; changed “comparable to a Square D Emon-Demon meter” to “Contain an electrical meter”; “is preferred to a driven ground rod” to “will be installed”.

Deleted: All dormitory parking lot lighting shall be fed from the electrical system in the dormitory associated with the lot routed through a controller cabinet to the same specs as mentioned above.
DIVISION 27
1. Updated Footer for Current Date
2. Reformatted for consistency to other Divisions.
3. Changes are identified with yellow highlights throughout the document.
4. 27 05 28 – deleted “fire code”

DIVISION 28
1. Updated Footer for Current Date
2. Reformatted TOC page for consistency to rest of Divisions.
3. 28 31 00
   Moved:
   Approved fire alarm equipment manufactures and control panels:
   Notifier:
   NFS2 - 3030
   NFS2 - 640
   NFS – 320
   Changed: “General” to “Designer/Installation contractor qualifications”
   Added: “Gamewell-FCI
   Added: Gamewell-FCI
   S3 Series
   E3 Series
   Added:
   • “NOTIFIER PANELS:” Notifier NFN Gateway and all required equipment “for communication to the OnyxWorks..”
   • GAMEWELL-FCI PANELS: Gateway and all required equipment for communication to the FocalPoint. An IP DACT shall also be provided for communication to NAU PD and all points shall be programmed/labeled correctly at the time of project completion.

Inspections and Final Acceptance
Deleted: “and accurate map detailing”
Added: “Digital” and “using USB Device”
Changed: from three year warranty to two year warranty
DIVISION 32

1. Updated Footer for Current Date
2. 32 00 00: Added “, and the prime contractor shall restore the site back to its original condition.”
3. 32 84 00 – Added – “Planning shall work towards plant and designs that allow for irrigation to be phased out as landscaping becomes established. At maturity irrigation will be limited to climate stresses only.”
   Changed “Calsense” to “master valve and brass rainbird EFB-CP”
   Change “Grounds” to Landscape and Outdoor Services”
   Changed “Clocks” to “Sprinkler Heads”
   Added “Heads shall be installed so that the top of the head is flush with the finish grade BEFORE sod”
4. 32 90 00 –
   Added: All plant materials will look vibrant and healthy. Plants that look weak, sickly, or unhealthy will be refused.

Installers will loosen or break up root balls on all plants, trees, shrubs, etc. prior to inserting into planting holes. All root ball binding materials will be removed before planting.

All plant materials shall be guaranteed for 1 full year following substantial completion or replaced at contractors’ expense.

Where applicable, percolation tests may be required to prove drainage.

New plantings must be fenced for protection from trampling at installation.

2 mowings or an agreed upon time frame depending on season of the year.

Spray heads shall be initially set at finish grade of soil BEFORE sod installation.

Deleted:

,2 pounds Ammonium Phosphate (16-20-0).
After 3 weeks “and again at the end of the maintenance period”

5. 32 92 00
   Deleted: Lawn grass shall not be used in any planting strip less than 36" wide “unless it has an extension of a continuous larger area.”
6. 32 92 22
   Deleted:
   All specified hydroseeding must be in place prior to August 1 and protection must be provided for 1 year.
7. 32 92 23
   Added:
   Sod with excessive weed content will be rejected.
8. 32 93 43 Part 1
   Added
   Trees guaranteed for two years.
All plant tags, pricing, indentifiers, care labels will be removed at planting. A catalog of sample tags will be provided to Landscaping and Outdoor Services at Substantial Completion.

with the intent of discontinuing irrigation once plants are established.

Part 2
Changed August to September

Part 3
Added:
of green colored “cyclone” or “snow” fencing

outer perimeter of the branches

with express approval of Landscaping and Outdoor Services
DIVISION 33

1. Updated Footer for Current Date
2. 33 00 00
   Added:
   Sanitary sewer and storm sewer manholes shall have a tracer wire j-box within the manhole ring.

   For components that come above ground without a junction box or box pad (fire hydrants, etc) shall have the tracer wire terminated in a small underground j-box next to those components.

   Deleted: as well is in or wrapped around any other component that comes out of the ground.

   Added:
   Other Utility Markers
   Valve can, manhole, and pullbox lids for utilities shall be installed with the appropriate utility name (Water, Gas, Electric, Telecom, ETC.)

Part 3:
Deleted:
   All shutdowns shall be scheduled in advanced with the Owner, and the Owner reserves the right to require shutdowns to occur during non-standard work times to mitigate the impact on the campus functions.

3. 33 71 19 – Added:
   Part 1 – General

   Part 2 – Products

   Pullboxes – Quazite PR style or approved equal.

   Part 3 - Execution
   Underground PVC conduits containing cables over 600 volts shall be a minimum of 4” and have a spare conduit for each feeder. The conduit system shall be encased with a 3000psi minimum of 3” of integral-color red concrete slurry (one 50lb bag of dye per cubic yard of concrete or 4% dye if liquid) on all sides of each conduit. Concrete shall be with aggregate small enough to work around conduits. Concrete around duct banks shall be carefully vibrated to prevent voids around and under conduits.

   Pullboxes shall be round enclosures. Any pullbox located in a sidewalk or roadway shall be traffic rated.

4. 33 71 39
   Deleted:
   Underground PVC conduit containing cables over 600 volts shall be encased with a 3000psi minimum of 3” of integral-color red concrete slurry (one 50lb bag of dye per cubic yard of concrete) on all sides of
each conduit. Concrete shall be with aggregate small enough to work around conduits. Concrete around duct banks shall be carefully vibrated to prevent voids around and under conduits.

5. 33 77 00 Part 1
   Added “or refurbished”

Blue Stake Procedure
Added: Marking in landscaping (grass, rock, natural, etc.) shall be with white flags. Marking on hard surfaces (asphalt, concrete, pavers, etc.) shall be in non-permanent white chalk paint.

NAU Blue Stake will clear 2 full business days after a request has been received.

Contractor shall remove the blue stake marks outside of the fenced area at the end of the excavation phase for CMAR projects in a manner that does not damage finished surfaces. All projects will remove blue stake marks at substantial completion in a manner that does not damage finished surfaces.