



Technical Education
and Skills Development Authority

Webliography

The Webliography is an electronic bibliographic listing of topics related to the qualification titles of a particular TVET priority sector, with pre-searched *URLs* (uniform resource locators) and descriptions (abstracts).

The pre-searched *URLs* provide contents in reference to the title of promulgated Training Regulations (TR). By clicking the weblinks (underlined *URLs* in blue text), your internet browser will direct you to the website/webpage where you can find the topic related to the title you selected. The Webliography is a useful tool for trainers who are designing and developing competency-based curriculum and learning materials.

[TESDA](#) » [Webliography](#) » [Construction Sector](#)

INTERNET RESOURCES

Construction Sector

Scope:

Buildings, roads and bridges are essential to ever growing communities that demand the highest quality work. Workers in this sector have various classifications and levels

Source: <http://www.processtechnicalservices.com/quality-assurance.asp>

List of qualifications:

- Articulated off-highway dump truck NC II
- Backhoe loader [HEO] NC II
- Building wiring maintenance NC II –III
- Bulldozer [HEO] NC II
- Carpentry NC II & III
- Concrete stacker NC II
- Construction lift passenger material elevator operation NC II
- Construction painting NC II & III
- Crawler crane [HEO] NC II
- Forklift [HEO] NC II
- Gantry crane [HEO] NC II
- Hydraulic excavator [HEO] NC II
- Masonry NC II & III
- Motor grader [HEO] NC II
- Paver [HEO] NC II
- Plumbing NC I – III
- PV system design NC II
- PV system installation NC II
- PV system servicing NC III
- Reinforcing steel works NC II
- Rigid off-highway dump truck [HEO] NC II
- Rigid on-highway [HEO] NC II
- Rigging NC II
- Road roller NC II
- Rough terrain crane NC II
- Scaffold erection NC I
- Screed operation NC I
- Structural erection NC I
- System formwork installation NC II
- Technical drafting NC II
- Tile setting NC II
- Transit tower crane NC II
- Truck mounted crane NC II
- Tower crane NC II
- Wheel loader NC II

❖ 2018 International Building Code (ICC IBC-2018)

<https://blog.ansi.org/2017/11/2018-international-building-code-icc-ibc/#qref>

This webpage provides information on building codes that are adopted in various countries. It also includes links to related topics.

[Updated January 31, 2019]

❖ National Building Code of the Philippines

http://www.dpwh.gov.ph/dpwh/references/laws_codes_orders/national_law

This webpage provides a downloadable PDF of PD 1096. It also includes links to construction-related topics

[Updated January 31, 2019]

❖ Construction in the Philippines

<https://www.giiresearch.com/report/time237680-construction-philippines-key-trends-opportunities.html>

This webpage provides information about the growth, prospects and projects of construction industry in the Philippines.

[Updated January 31, 2019]

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Articulated off-highway dump truck NC II

This qualification consists of competencies that workers must achieve to enable them to perform tasks such as loading and dumping of earth materials in the construction, mining sites or other locations.

Core Competencies

- Perform pre- and post-operation procedures for hauling equipment
- Perform basic preventive maintenance servicing for hauling equipment
- Perform productive operation for off-highway dump truck (articulated)

❖ Dump truck definition

<https://www.merriam-webster.com/dictionary/dump%20truck>

This webpage defines the dump truck as a vehicle used in transporting bulk materials that has a body that tilts to dump its contents.

[Updated January 31, 2019]

❖ The first articulated dump truck

<http://www.constructionequipment.com/first-articulated-dump-trucks>

This webpage features the first ADT that was introduced in 1963.

[Updated January 31, 2019]

❖ John Deere Articulated off-highway dump trucks

https://www.deere.com/wps/dcom/en_US/products/equipment/articulated_dump_trucks/articulated_dump_trucks.page

This is a webpage showing dump trucks in action, including the weight categories and specifications.

[Updated January 31, 2019]

❖ How to specify trucks for off-road performance

<http://www.constructionequipment.com/how-specify-trucks-road-performance>

This webpage details the specifications required for an off-road truck.

[Updated January 31, 2019]

❖ Maintenance Tips for Dump Trucks

<https://www.baierl.com/maintenance-tips-dump-trucks/>

This webpage provides information on maintaining dump trucks.

[Updated January 31, 2019]

❖ Articulated Dump Trucks (ADTs) Produce for Those Who are Prepared

<https://www.constructionequipment.com/articulated-dump-trucks-adts-produce-those-who-are-prepared>

This webpage provides information on operating articulated dump trucks. It also includes illustrations on driving, loading and unloading.

[Updated January 31, 2019]

Backhoe loader [HEO] NC II

This qualification consists of competencies that workers must achieve to enable them to perform tasks such as excavating earth materials in construction sites or other locations.

Core Competencies

- Perform pre- and post-operation procedures for earth moving equipment
- Perform basic preventive maintenance servicing for earth moving equipment
- Perform productive operation for backhoe loader

❖ Description of backhoe loader

http://en.wikipedia.org/wiki/Backhoe_loader

This webpage describes backhoe loaders as equipment used in construction to dig earth.

[Updated January 31, 2019]

❖ CAT backhoe loaders

http://www.cat.com/en_IN/products/new/equipment/backhoe-loaders.html

This webpage features the CAT backhoe loaders including some other models for use in construction.

[Updated January 31, 2019]

❖ How to operate a backhoe

<http://www.wikihow.com/Operate-a-Backhoe>

This webpage explains the operation of a backhoe.

[Updated January 31, 2019]

❖ Tips for Basic Preventive Maintenance for Backhoe Loaders

<http://www.trekkergroup.com/tips-basic-preventive-maintenance->

INTERNET RESOURCES

	<p>backhoe-loaders/ This webpage provides tips on maintaining backhoe loaders. [Updated January 31, 2019]</p>
<p>Bulldozer [HEO] NC II</p> <p>This qualification consists of competencies that workers must achieve to enable them to perform tasks such as excavating, dozing, ripping, winching, and clearing of earth materials in construction sites or other locations.</p> <p>Core Competencies</p> <ul style="list-style-type: none"> • Perform pre- and post-operation procedures for earth moving equipment • Perform basic preventive maintenance servicing for earth moving equipment • Perform productive operation for bulldozer 	<p>❖ Description of Bulldozer operator http://dot-job-descriptions.careerplanner.com/BULLDOZER-OPERATOR-I.cfm This learning resource from CareerPlanner.com describes the job of a bulldozer operator and includes tips on how to get the right job. [Updated January 31, 2019]</p> <p>❖ Bulldozer operation modules http://www.heavyconstructionacademy.com/category/bulldozer-operations/ This webpage describes the operation of bulldozers in different terrains including safety to the operator and equipment. [Updated January 31, 2019]</p> <p>❖ How to operate a bulldozer https://sciencing.com/operate-bulldozer-7206633.html This webpage provides information and instructions on operating the bulldozer including safety. [Updated January 31, 2019]</p> <p>❖ Daily Maintenance Tasks https://beamersdozer.weebly.com/daily-maintenance-tasks.html This webpage provides instructions on maintaining the bulldozer. [Updated January 31, 2019]</p>
<p>Carpentry NC II</p> <p>This qualification consists of competencies that a person must achieve that will enable him/her to perform fabrication, installation and stripping of formworks, its components and supports.</p> <p>Core Competencies</p> <ul style="list-style-type: none"> • Prepare / stake-out building lines • Fabricate formworks • Install formwork components • Strip formwork components • Install framing works <p>Carpentry NC III</p> <p>Qualification consists of competencies that a person must achieve and that will enable him / her to install architectural ceiling, wall sheets / panels / boards and floor finishes; fabricate door / window jambs and panels; install stair components or pre-fabricated stairs assembly; and install built-in Or pre-fabricated cabinets.</p> <p>Core Competencies</p> <ul style="list-style-type: none"> • Install architectural ceiling, 	<p>❖ Basic Construction and Carpentry Techniques http://www.basiccarpentrytechniques.com/ This webpage provides information on basic carpentry skills necessary for completing home renovation, home building and other construction projects. [Updated January 31, 2019]</p> <p>❖ Laying out the Building Lines for Your Natural Building https://naturallivingschool.com/2012/10/24/laying-out-the-building-lines-for-your-natural-building/ This webpage provides information on laying out building lines for site preparation of a building structure. [Updated January 31, 2019]</p> <p>❖ Designing Buildings Wiki-Carpentry https://www.designingbuildings.co.uk/wiki/Carpentry This webpage defines the job of a carpenter as one of the oldest trades and still widely required in modern construction that involves shaping, cutting, and installation of wood for buildings and other structures. [Updated January 31, 2019]</p> <p>❖ Vector Aluminum Formwork https://www.vectoratlantic.net/formwork?gclid=EAlaIqobChMlr-eMwYmX4AIVig0qCh1kKQ_4EAAYASAAEqlHpvD_BwE This webpage features the Vector Aluminum Formwork that offers strength and flexibility required in the construction of buildings and other structures. [Updated January 31, 2019]</p> <p>❖ Concrete Formwork Removal Time, Specifications and Calculations https://theconstructor.org/building/formwork-removal-time-</p>

INTERNET RESOURCES

wall sheaths / panels / boards and floor finishes

- Fabricate / install door / window jambs and panels
- Install stair components and / or pre-fabricated stairs assembly
- Install built-in and / or pre-fabricated cabinets

[specification/11083/](#)

This webpage provides information on the removal of formworks after the concrete has gained sufficient strength.

[Updated January 31, 2019]

❖ **Basic Carpentry Framing Tips**

<https://www.carpentry-pro-framer.com/>

This webpage provides information on building wooden frames for structures i.e. roof and floors. It also includes illustrations of frames.

[Updated January 31, 2019]

❖ **3M DI-NOC Installation**

<https://www.windowfilmdepot.com/product/3m-di-noc/>

This webpage features 3M products that can transform existing surfaces to any design and color desired by applying vinyl wrap finishes.

[Updated January 31, 2019]

❖ **Building an Interior Door: Part One – The Frame**

<https://www.finewoodworking.com/2009/04/23/building-an-interior-door-part-one-the-frame/>

This webpage provides instructions in making wooden door jambs and panels with images of the activities.

[Updated January 31, 2019]

❖ **How to Make a Window Frame**

<https://www.hunker.com/13403270/how-to-make-a-window-frame>

This webpage provides instructions in making wooden window jambs and panels with video.

[Updated January 31, 2019]

❖ **How to Install Wood Stairs**

<https://www.wikihow.com/Install-Wood-Stairs>

This webpage provides instructions in installing wood stairs with illustrations and guide on how to perform the activities.

[Updated January 31, 2019]

❖ **How to Install Prefab Wood Stairs**

https://www.ehow.com/how_12226383_install-prefab-wood-stairs.html

This webpage provides instructions in installing prefabricated wood stairs with illustrations and guide on how to perform the activities.

[Updated January 31, 2019]

❖ **Finishing and Installing a Built-In Cabinet Bookcase with Counter**

<https://www.instructables.com/id/Finishing-Installing-a-Built-In-Cabinet-Bookcase-w/>

This webpage provides instructions in installing built-in bookcase cabinet with counter and drawers.

[Updated January 31, 2019]

❖ **Install pre-fabricated kitchen cabinets**

<https://www.rona.ca/en/projects/Install-pre-fabricated-kitchen-cabinets>

This webpage provides instructions in installing pre-fabricated cabinets.

[Updated January 31, 2019]

INTERNET RESOURCES

Concrete pump NC II

This qualification consists of competencies that workers must achieve to enable them to perform tasks such as pumping ready-mixed concrete to high-rise structures or buildings in construction sites or in similar locations.

Core Competencies

- Perform pre- and post-operation procedures for concreting and asphaltting equipment
- Perform basic preventive maintenance servicing for concreting and asphaltting equipment
- Perform productive operation for concrete pump

❖ Concrete pump definition

http://en.wikipedia.org/wiki/Concrete_pump
<http://ezinearticles.com/?What-Is-A-Concrete-Pump?&id=5367738>

These webpages defines concrete pump.

[Updated January 31, 2019]

❖ Concrete pump operator career

<http://www.mymajors.com/career/concrete-pump-operator/>

This webpage describes the career of a concrete pump operator.

[Updated January 31, 2019]

❖ How does a concrete pump truck work

<http://www.everything-about-concrete.com/how-does-a-concrete-pump-truck-work.html>

This webpage describes the equipment used by a concrete pump operator.

[Updated January 31, 2019]

❖ Diesel Concrete Pump

<https://aimixgroup.com/diesel-concrete-pump/>

This webpage provides information about diesel concrete pump.

[Updated January 31, 2019]

❖ How to Prep, Use, and Clean a Concrete pump Basics

<https://www.youtube.com/watch?v=CGzE6FrXDmY>

This webpage provides an instructional video in preparing, using and cleaning a concrete pump.

[Updated January 31, 2019]

❖ Don't Let Paver Performance Slip

<https://www.forconstructionpros.com/concrete/equipment-products/concrete-pavers/article/11413652/maintain-concrete-pavers-for-maximum-longevity-and-productivity>

This webpage provides tips on maintaining concrete pavers to avoid downtime in its operation.

[Updated January 31, 2019]

Construction lift passenger material elevator operation NC II

This qualification consists of competency that individuals must achieve to enable them to operate construction lift passenger/ material elevator. It includes pre-operation, productive, post-operation, basic maintenance and enforcement of safety standards for lifts/ elevators.

Core Competencies

- Operate Construction Lift Passenger/ Material Elevator

❖ Basic Information About Lifts

<http://www.gmv-eu.com/info-lift.html>

This webpage provides information about lifts.

[Updated January 31, 2019]

❖ Types of Construction Lifts or Boom Lifts

<https://careertrend.com/list-7512663-types-construction-lifts-boom-lifts.html>

This webpage provides information about the types of lifts used in the construction industry.

[Updated January 31, 2019]

❖ How to Operate an Aerial Lift

<https://www.wikihow.com/Operate-an-Aerial-Lift>

This webpage provides the steps in operating an aerial lift to perform construction-related activities in elevated locations.

[Retrieved June 19, 2019]

Construction painting NC II

This Qualification consists of competencies that a person must achieve that will enable him / her to prepare tools, painting materials and

❖ How to Prepare a Painting Kit

<https://www.diynetwork.com/how-to/skills-and-know-how/painting/how-to-prepare-a-painting-kit>

This webpage provides instructions in preparing a painting kit.

[Updated January 31, 2019]

❖ Tools for Surface Preparation

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equipment; prepare surfaces (wood, concrete, drywall and metal) for painting and assembling access equipment; and perform painting work.

Core Competencies

- Prepare tools, painting materials and equipment
- Prepare surface for painting
- Perform painting work

Construction painting NC III

This Qualification consists of competencies that a person must achieve and that will enable him / her to erect scaffolds and platforms, estimate paint requirement, prepares concrete, wooden and steel surfaces for re-painting and / or re-touching work and perform re-painting / retouching works.

Core Competencies

- Prepare tools, painting materials and equipment
- Prepare surface for painting
- Perform painting work
- Estimate painting requirements
- Perform mixing / tinting of paints
- Perform re-painting / re-touching work

<https://www.diynetwork.com/how-to/skills-and-know-how/painting/tools-for-surface-preparation>

This webpage provides instructions on how to prepare the tools required in surface preparation.

[Updated January 31, 2019]

❖ How to prepare walls for painting

<https://www.cleanipedia.com/za/in-the-home/how-to-prepare-walls-for-painting.html>

This webpage provides instructions on how to prepare walls for painting by cleaning and removing obstructions on the surfaces of areas to be painted.

[Updated January 31, 2019]

❖ Wall Painting Philippines

<https://www.paint.com.ph/wall-painting-philippines/>

This webpage provides instructions on how to customize wall painting to suit any lifestyle.

[Updated January 31, 2019]

❖ How to Estimate Painting Jobs

<https://www.wikihow.com/Estimate-Painting-Jobs>

This webpage provides the steps in estimating the cost of paint and supplies to be used in a painting job.

[Retrieved June 19, 2019]

❖ Paint Color Mixing Chart

<http://www.housepaintingtutorials.com/paint-color-mixing-chart.html>

This webpage provides a guide in mixing paints using a paint color mixing chart.

[Retrieved June 19, 2019]

❖ 6 Steps on How to Properly Paint Over a Painted Wall

<https://www.nipponpaint.com.sg/resources/painting-articles/6-tips-paint-over-painted-walls/>

This webpage provides suggestions on repainting walls.

[Retrieved June 19, 2019]

Container stacker NC II

This qualification consists of competencies that workers must achieve to enable them to perform tasks such as handling materials in construction sites or other locations.

Core Competencies

- Perform pre- and post-operation procedures for material handling equipment
- Perform basic preventive maintenance servicing for container stacker
- Perform productive operation for container stacker

❖ Container stacker definition

<http://www.thefreedictionary.com/stacker>

http://en.wikipedia.org/wiki/Intermodal_container

This webpage defines the container stacker.

[Updated January 31, 2019]

❖ Container stacker job description

<http://www.seek.com.au/job/26832738>

This webpage defines the role of a container stacker for the job requirement and opportunity.

[Updated January 31, 2019]

❖ Container stacker job opportunities

http://www.jobseeker.com.au/Reach-Container-Stacker-jobs#email_alert_modal

This webpage lists some foreign career opportunities for a container stacker.

[Updated January 31, 2019]

❖ Container stacking cones

<http://www.pacificmarine.net/marine-deck/cargo-securing/container-stacking-cones.htm>

This webpage provides information on the cones used in securing the container to the carriage.

[Updated January 31, 2019]

INTERNET RESOURCES

Crawler crane NC II

This qualification consists of competencies that workers must achieve to enable them to perform tasks such as lifting and transferring of heavy loads in construction sites or other locations.

Core Competencies

- Perform pre- and post-operation procedures for lifting equipment
- Perform basic preventive maintenance servicing for lifting equipment
- Perform productive operation for crawler crane

❖ Crawler (machine)

[https://en.wikipedia.org/wiki/Crane_\(machine\)#Crawler](https://en.wikipedia.org/wiki/Crane_(machine)#Crawler)

This webpage defines crane as a type of machine, generally equipped with a hoist rope, wire ropes or chains, and sheaves, that can be used both to lift and lower materials and to move them horizontally.

[Updated January 31, 2019]

❖ Crawler crane operator jobs

<http://www.jobisjob.com/crawler+crane+operator/jobs>

This webpage describes the jobs of a crawler crane operator.

[Updated January 31, 2019]

❖ How to Operate a Crawler Crane

<http://www.howtodothings.com/automotive/how-to-operate-crawler-cranes>

This webpage describes the operation of a crawler crane.

[Updated January 31, 2019]

❖ Crawler crane safety

http://www.ehow.com/facts_6873149_crawler-crane-safety.html

This webpage details the safety aspects in operating the crawler crane.

[Updated January 31, 2019]

Forklift NC II

This qualification consists of competencies that workers must achieve to enable them to perform tasks such as handling of materials in the warehouse using the forklift.

Core Competencies

- Perform pre- and post-operation procedures for lifting equipment
- Perform basic preventive maintenance servicing for lifting equipment
- Perform productive operation for forklift

❖ Forklift

<https://en.wikipedia.org/wiki/Forklift>

This webpage defines forklift (also called lift truck, jitney, fork truck, fork hoist and forklift truck) as a powered industrial truck used to lift and move materials over short distances..

[Updated January 31, 2019]

❖ Forklift safety tips

<https://www.atlantictraining.com/safety-tips/forklift-safety-tips.php>

This webpage provides safety tips in operating forklifts.

[Updated January 31, 2019]

❖ How to operate a forklift: pre-operation, traveling, load handling, and maintenance

<https://www.convergencetraining.com/blog/how-to-operate-a-forklift>

This webpage provides information and guide on the operation of forklift including handling and safety.

[Updated January 31, 2019]

❖ Importance of Forklift Preventive Maintenance

<https://www.renoforklift.com/importance-of-forklift-preventive-maintenance/>

This webpage provides a guide and reasons why preventive maintenance is necessary to increase the longevity of forklift.

[Updated January 31, 2019]

Gantry crane NC II

This qualification consists of competencies that workers must achieve to enable them to perform tasks such as handling materials in construction sites or other locations.

Core Competencies

- Perform pre- and post-operation procedures for

❖ Gantry Crane

https://en.wikipedia.org/wiki/Gantry_crane

This webpage defines gantry crane as a crane built atop a gantry, which is a structure used to straddle an object or workspace. They can range from enormous “full” gantry cranes capable of lifting some of the heaviest loads in the world, to small shop cranes, used for tasks such as lifting automotive engines out of vehicles.

[Updated January 31, 2019]

❖ Gantry Crane-Crane Safety Procedures

<https://www.tru.ca/safety/workinglearningsafely/work/gantrycrane.h>

INTERNET RESOURCES

<p>material handling equipment</p> <ul style="list-style-type: none"> • Perform productive operation for gantry crane 	<p>tml This webpage provides a guide in inspecting and operating the gantry crane. [Updated January 31, 2019]</p> <p>❖ Gantry Crane https://en.wikipedia.org/wiki/Gantry_crane This webpage defines the gantry crane or an overhead crane as a crane built atop a gantry which is a structure used to straddle an object or workspace. They are also called bridge crane. [Updated January 31, 2019]</p> <p>❖ How to operate the electrical system of gantry crane safely https://zzhz.com/News/Gantry_Crane/doc208.html This webpage provides information in operating the electrical system of gantry crane safely to avoid accidents. [Retrieved June 19, 2019]</p>
<p>Hydraulic excavator NC II</p> <p>This qualification consists of competencies that workers must achieve to enable them to perform tasks such as excavating earth materials in construction sites or other locations with the use of hydraulic excavator or backhoe equipment.</p> <p>Core Competencies</p> <ul style="list-style-type: none"> • Perform pre- and post-operation procedures for earth-moving equipment • Perform basic preventive maintenance servicing for earth-moving equipment • Perform productive operation for hydraulic excavator 	<p>❖ Excavator https://en.wikipedia.org/wiki/Excavator This webpage defines excavator as heavy construction equipment consisting of a boom, dipper (or stick), bucket and cab on a rotating platform known as the “house”. [Updated February 7, 2019]</p> <p>❖ How to inspect a used compact excavator https://www.equipmentworld.com/inspection-checkpoint-12/ This webpage provides information and instructions on inspecting used min hydraulic excavator prior its operation. [Updated February 7, 2019]</p> <p>❖ Heavy Equipment Inspection – Excavator Checklist http://www.inspectequipment.com/ExcavatorInspection.html This webpage provides a checklist for the inspection and maintenance of hydraulic excavator. [Updated February 7, 2019]</p> <p>❖ Maintenance of Heavy Earth Moving Equipment http://mahindraconstructionequipment.com/blog/maintenance-of-heavy-earth-moving-equipment This webpage provides guidelines on the maintenance of heavy earth moving equipment. [Updated February 7, 2019]</p> <p>❖ Productivity Guide: Excavators 45 to 50 Metric Tons https://www.equipmentworld.com/productivity-guide-excavators-45-to-50-metric-tons/ This webpage provides tips on the safe operation of heavy earth moving equipment. [Updated February 7, 2019]</p>
<p>Masonry NC I</p> <p>This qualification consists of competencies that a person must achieve that will enable him/her to prepare masonry materials and perform basic masonry works.</p> <p>Core Competencies</p> <ul style="list-style-type: none"> • Prepare masonry materials 	<p>❖ Masonry https://en.wikipedia.org/wiki/Masonry/ This webpage defines masonry as the building structures from individual units, which are often laid in and bound together by mortar; the term masonry can also refer to the units themselves. [Updated February 7, 2019]</p> <p>❖ Complete construction masonry and concrete https://www.equipmentworld.com/inspection-checkpoint-12/ This is a series of construction learning resource materials that provides insights into installation, construction, storage and</p>

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- Perform basic masonry works

Masonry NC II

This qualification consists of competencies that a person must achieve that will enable him/her to perform construction of brick and concrete block structure, installation of pre-cast baluster/ handrail and plastering of concrete wall surface.

Core Competencies

- Prepare masonry materials
- Perform basic masonry works
- Lay brick/block for structure
- Plaster wall surface
- Install pre-cast balusters and handrail

Masonry NC III

This qualification consists of competencies that a person must achieve and that will enable him / her to lay bricks / blocks for structure, plasters concrete masonry / concrete surface, installs pre-cast baluster and handrail, apply special cement finishes to concrete and masonry surfaces and repair defective concrete and masonry surfaces.

Core Competencies

- Prepare masonry materials
- Perform basic masonry work
- Lay bricks / blocks for structure
- Plaster concrete / masonry surface
- Install pre-cast baluster and handrail
- Apply special cement finishes to concrete and masonry surface
- Repair defective concrete and masonry surface

cleaning techniques. It is more on decision-making and construction performance.

[Updated February 7, 2019]

❖ How to Lay Brick

<https://www.diynetwork.com/how-to/skills-and-know-how/masonry-and-tiling/how-to-lay-brick>

This webpage provides a step-by-step guide on laying masonry blocks or bricks including images of the process.

[Updated February 7, 2019]

❖ How to Lay Concrete Blocks

<https://www.wikihow.com/Lay-Concrete-Blocks>

This webpage provides a step-by-step guide on laying concrete blocks, with images of the procedures.

[Updated June 19, 2019]

❖ How to Plaster a Wall

<https://www.wikihow.com/Plaster-a-Wall>

This webpage provides a step-by-step guide on laying plaster on a wall two parts with illustrations.

[Updated February 7, 2019]

❖ How to Install Concrete Balustrades

https://www.ehow.com/how_12213643_install-concrete-balustrades.html

This webpage provides a step-by-step guide on installing concrete balustrade with video on how to perform the task.

[Updated February 7, 2019]

❖ How to Finish Concrete

<https://www.familyhandyman.com/masonry/pouring-concrete/how-to-finish-concrete/view-all/>

This webpage provides a guide on finishing concrete and video on pouring concrete.

[Updated February 7, 2019]

❖ Concrete Repairs

<https://precast.org/2010/05/concrete-repairs/>

This webpage provides a guide on repairing concrete surfaces and defects on other concrete projects.

[Updated February 7, 2019]

❖ Checklist for Masonry Wall Construction

<https://theconstructor.org/building/checklist-masonry-wall-construction/20329/>

This webpage provides a guide on preparing masonry materials for wall construction by using an inspection checklist.

[Retrieved June 19, 2019]

❖ How to Properly Mix Concrete

<https://www.familyhandyman.com/masonry/pouring-concrete/how-to-properly-mix-concrete/>

This webpage provides a guide in mixing concrete properly, with images and videos to guide the reader.

[Retrieved June 19, 2019]

❖ How to Finish Concrete

<https://www.wikihow.com/Finish-Concrete>

This webpage provides a guide in finishing concrete, with images to guide the reader.

[Retrieved June 19, 2019]

INTERNET RESOURCES

Motor grader NC II

This qualification consists of competencies that workers must achieve to enable them to perform tasks such as leveling, spreading, side cutting, ditching, hi-bank cutting, ripping, scarifying of earth materials in construction sites or other locations.

Core Competencies

- Perform pre- and post-operation procedures for earth moving equipment
- Perform basic preventive maintenance servicing for earth moving equipment
- Perform productive operation for motor grader

❖ Grader

<https://en.wikipedia.org/w/index.php?search=motor+grader&title=Special%3ASearch&profile=advanced&fulltext=1&advancedSearch-current=%7B%7D&ns0=1>

This webpage defines grader, also referred to as a road grader or a motor grader, as a construction machine with a long blade used to create a flat surface during the grading process.

[Updated February 7, 2019]

❖ How to Operate a Road Grader

<https://careertrend.com/how-7276515-operate-road-grader.html>

This webpage provides information and instructions on the operation of road grader.

[Updated February 7, 2019]

❖ Tips for Basic Preventive Maintenance for Motor Graders

<https://www.trekkergroup.com/tips-for-basic-preventive-maintenance-for-motor-graders/>

This webpage provides information and instructions on performing preventive maintenance for motor grader.

[Updated February 7, 2019]

❖ Motor Grader Operations

<https://www.foleyeq.com/motor-grader-operations.html>

This webpage provides information on the operation of motor grader controls and functions.

[Updated February 7, 2019]

Paver NC II

This qualification consists of competencies that workers must achieve to enable them to perform tasks such as to lay asphalt or concrete materials on roads.

Core Competencies

- Perform pre- and post-operation procedures for concreting and asphaltting equipment
- Perform basic preventive maintenance servicing for concreting and asphaltting equipment
- Perform productive operation for paver

❖ How to Install Asphalt

<https://www.wikihow.com/Install-Asphalt>

This webpage provides a guide in installing asphalt on a driveway.

[Retrieved June 19, 2019]

❖ How It Works-Road Repair

<http://asphaltzipper.com/how-it-works/road-repairs>

This webpage provides information on asphalt zippers that reclaims old asphalt from the road to be reused instantly or later. It also includes video and images of the topics.

[Retrieved June 24, 2019]

❖ Asphalt 101: All You Need to Know About This Paving Material

<https://nearsay.com/c/242210/214514/asphalt-101-all-you-need-to-know-about-this-paving-material>

This webpage provides answers to frequently asked questions (FAQ) about asphalt.

[Retrieved June 24, 2019]

❖ Everything You Need to Know About Asphalt Paving

<https://www.wolfpaving.com/everything-you-need-to-know-about-asphalt-paving>

This webpage provides information on the importance of asphalt paving, its benefits, types of asphalt, types of damage, methods of repair, and equipment used.

[Retrieved June 24, 2019]

❖ Comprehensive Guide to Asphalt Paver Maintenance

<https://www.forconstructionpros.com/asphalt/pavers/article/20982978/comprehensive-guide-to-asphalt-paver-maintenance>

This webpage provides tips on maintaining asphalt pavers to avoid downtime in its operation.

[Updated January 31, 2019]

INTERNET RESOURCES

Plumbing NC I

This qualification consists of competencies that a person must achieve in installing a single plumbing unit which includes one unit each of water meter, water closet, lavatory, shower with single point water heater and kitchen sink. It also includes installing floor drains and faucets.

Core Competencies

- Prepare pipes for installation
- Make piping joints and connections
- Perform minor construction works

Plumbing NC II

This qualification consists of competencies that a person must achieve in installing multiple units of plumbing system with multi-point hot- and cold-water lines for medium-rise buildings. It also includes plumbing repair and maintenance work.

Core Competencies

- Prepare pipes for installation
- Make piping joints and connections
- Perform minor construction works
- Perform single unit plumbing installation and assemblies
- Perform plumbing repair and maintenance works
- Conduct pipe leak testing

Plumbing NC III

This qualification consists of competencies that a person must achieve in installing simple and complex plumbing systems including centralized and storage type of water heater system for high-rise buildings. He/she leads, supervises and works with the team.

Core Competencies

- Perform complex and multi-story plumbing installation and assemblies
- Install hot and potable chilled

❖ Tips and Tricks for Sewer Pipe Installation

<https://www.thebalancesmb.com/sewer-pipe-installation-845035>

This webpage provides information and guide on installing sewer pipes. It also includes images to provide an insight of the activities.
[Updated February 7, 2019]

❖ Types of Pipe Fittings Used in Piping

<https://hardhatengineer.com/pipe-fittings/>

This webpage provides information on pipe fittings. It also shows charts to guide in selecting the type of pipe fitting to use in any connection with illustrations of various pipe fittings.
[Updated February 7, 2019]

❖ How to Connect Pipes & Fittings

https://www.diy.com/ideas-advice/how-to-connect-pipes-fittings/CC_npcart_400170.art/

This webpage provides a guide for connecting various pipes. It also includes related topics in cutting, bending, connecting and running new supply pipes with illustrations.
[Updated February 7, 2019]

❖ Basic plumbing repair

<http://www.diynetwork.com/plumbing/index.html>

This is an illustrated learning resource material that explains step-by-step procedures and techniques of basic plumbing repair.
[Updated February 7, 2019]

❖ Building codes and standards Plumbing Code 2006

<http://www.housing.gov.bc.ca/building/code/>

This webpage provides learning resource materials and references which governs & regulates quality of materials, designs, erection, installation, alteration, repair, replacement and maintenance of plumbing systems.
[Updated February 7, 2019]

❖ Modern plumbing: instructors resource

<http://www.amazon.com/Modern-Plumbing-Instructors-Resource-Binder/dp/1590704037>

This webpage contains instructor's resource material that provides a guide and basic instructions on handling various hand tools.
[Updated February 7, 2019]

❖ Basic Design for Piping: Isometric Drawings

<http://www.pipingguide.net/2015/01/basic-design-for-piping-isometric.html>

This webpage provides a guide on drawing piping installations that can be plotted in plumbing plans and blueprints.
[Updated February 7, 2019]

❖ Standards for materials used in plumbing systems

https://www.who.int/water_sanitation_health/hygiene/plumbing10.pdf

This webpage provides information (in downloadable PDF) on the standards for materials to be used when installing plumbing systems.
[Updated June 25, 2019]

❖ Guide on How to Choose the Right Plumbing Pipe

<https://www.thebalancesmb.com/guide-on-how-to-choose-the-right-plumbing-pipe-844858>

This webpage provides a guide with illustrations in choosing the correct type of pipes and fittings.
[Updated June 25, 2019]

INTERNET RESOURCES

<p>water piping system</p> <ul style="list-style-type: none"> • Draft plumbing design 	<p>❖ High-rise plumbing design and plumbing codes https://www.phcpropros.com/articles/1899-high-rise-plumbing-design-and-plumbing-codes This webpage provides information and tips on installing plumbing in high-rise buildings, including the use of booster pump, heater and drainage vent stack. [Updated June 25, 2019]</p>
<p>PV system design NC II</p> <p>This Qualification consists of competencies that a person must achieve to be able to determine customer solar-energized load requirements and calculate system components requirements (system sizing) of small solar home systems up to 1kWp. It also include competency to prepare and specify components in Bill of Materials and prepare Installation drawing.</p> <p>Core Competencies</p> <ul style="list-style-type: none"> • Determine Customer Requirements • Calculate System Components Requirements (System Sizing) • Specify Components in Bill of Materials • Prepare Installation Drawing 	<p>❖ What is Photovoltaics? https://rgsenergy.com/how-solar-panels-work/what-is-photovoltaics/ This webpage provides information about photovoltaics which is defined as the science behind the most popular form of harnessing solar energy [Updated June 25, 2019]</p> <p>❖ Photovoltaics? https://rgsenergy.com/how-solar-panels-work/what-is-photovoltaics/ This webpage provides information about photovoltaics which is the science behind the most popular form of harnessing solar energy. [Updated June 25, 2019]</p> <p>❖ Photovoltaic System Sizing https://www.fuelcellstore.com/blog-section/photovoltaic-system-sizing?qclid=EAlaIQobChMI98r3utKD4wIVFraWCh2gWqSMEAAAYASAAEgJ-V_D_BwE This webpage provides information on how to determine the size of a photovoltaic (PV) system for installation. [Updated June 25, 2019]</p> <p>❖ Solar Power Components https://www.mysolarquotes.co.nz/about-solar-power/residential/components/ This webpage provides information on the components required in installing solar power systems. [Updated June 25, 2019]</p> <p>❖ What are the components of a solar energy storage system? https://www.solarpowerworldonline.com/2017/08/components-solar-energy-storage-system/ This webpage provides information on the components required in installing solar energy storage systems. [Updated June 25, 2019]</p>
<p>PV system installation NC II</p> <p>This Qualification consists of competencies that a person must achieve to enable him/her to perform site assessment, check PV components and materials' compliance, install and commission PV system and prepare documentation requirements for PV systems installation.</p> <p>Core Competencies</p> <ul style="list-style-type: none"> • Perform site assessment 	<p>❖ Photovoltaics https://en.wikipedia.org/wiki/Photovoltaics This webpage defines photovoltaics (PV) as the conversion of light into electricity using semiconducting materials that exhibit the photovoltaic effect, a phenomenon studied in physics, photochemistry, and electrochemistry. A photovoltaic system employs solar modules, each comprising a number of solar cells, which generate electrical power. [Updated June 25, 2019]</p> <p>❖ How Do Solar Panels Work? https://www.livescience.com/41995-how-do-solar-panels-work.html This webpage provides information on how solar panels work. [Updated June 25, 2019]</p>

INTERNET RESOURCES

<ul style="list-style-type: none"> Check PV components/materials compliance Install PV system Perform PV System Testing and Commissioning 	<ul style="list-style-type: none"> ❖ How Do Solar Panels Work? https://www.livescience.com/41995-how-do-solar-panels-work.html This webpage provides information on how solar panels work. [Updated June 25, 2019] ❖ Photovoltaic Tutorial: Step0bystep guide to going solar https://www.thesolarplanner.com/steps_page12.html This webpage provides a guide in installing photovoltaic systems. [Updated June 25, 2019] ❖ Solar Panel Installation http://www.altenergy.org/renewables/solar/DIY/solar-power-installation.html This webpage provides tips in installing solar panels. It also gives some details on what to do to succeed in the installation activity with easy-to-follow instructions and recommendations including safety. [Updated June 25, 2019] ❖ Testing Your Solar Panels http://www.altenergy.org/renewables/solar/DIY/solar-panel-testing.html This webpage provides tips in testing solar panels after installing. [Updated June 25, 2019]
<p>PV system servicing NC II</p> <p>This qualification consists of competencies that a person must achieve to be to perform PV system maintenance, troubleshooting, and repair of small solar home systems up to 1kWp.</p> <p>Core Competencies</p> <ul style="list-style-type: none"> Perform PV System Diagnosis Repair PV System Monitor PV System Operation 	<ul style="list-style-type: none"> ❖ Fault detection and diagnosis methods for photovoltaic systems: A review https://www.sciencedirect.com/science/article/pii/S1364032118301370 This webpage provides information and procedures in diagnosing photovoltaic system faults. [Updated June 25, 2019] ❖ Photovoltaic System Troubleshoot & Repair https://synergielectricnj.com/services-pv.html This webpage provides information and guide in troubleshooting and repairing photovoltaic systems. [Updated June 25, 2019] ❖ Photovoltaic System Monitoring http://www.pvresources.com/en/inverters/monitoring.php This webpage provides information and guide in monitoring photovoltaic systems including local and remote monitoring with data logging and public displays. [Updated June 25, 2019]
<p>Reinforcing steel works NC II</p> <p>This Qualification consists of competencies that individuals must achieve to enable them to fabricate and install RSB materials in high rise and infrastructure projects.</p> <p>Core Competencies</p> <ul style="list-style-type: none"> Fabricate RSB materials Install RSB material 	<ul style="list-style-type: none"> ❖ Rebar https://en.wikipedia.org/wiki/Rebar This webpage defines rebar (short of reinforcing bar), known when massed as reinforcing steel or reinforced steel, as a steel bar or mesh of steel wires used as a tension device in reinforced concrete and reinforced masonry structures to strengthen and aid the concrete under tension. [Updated June 26, 2019] ❖ Fabrication and Placement of Reinforcing Steel http://navybmrc.com/study%20material/14251a/14251A_ch3.pdf This webpage provides a downloadable PDF that describes how reinforcing steel is fabricated and placed in a construction structure. [Updated June 26, 2019]

INTERNET RESOURCES

Rigid off-highway dump truck NC II

This qualification consists of competencies that workers must achieve to enable them to perform tasks such as loading and dumping of earth materials in the construction, mining sites or other locations.

Core Competencies

- Perform pre- and post-operation procedures for hauling equipment
- Perform basic preventive maintenance servicing for hauling equipment
- Perform productive operation for off-highway dump truck (rigid)

❖ Dump Truck

https://en.wikipedia.org/wiki/Dump_truck

This webpage defines dump truck, also known as a dumper truck or tipper truck is used for taking dumps (such as sand, gravel or demolition waste) for construction.

[Updated June 26, 2019]

❖ How to Operate a PTO on a Dump Truck

<https://www.hunker.com/13425640/how-to-operate-a-pto-on-a-dump-truck>

This webpage provides a guide on operating a power take-off (PTO) on a dump truck to open the tailgate and raise the bed of the truck.

[Updated June 26, 2019]

❖ Maintenance Tips for Dump Truck

<https://www.baierl.com/maintenance-tips-dump-trucks/>

This webpage provides a guide on maintain the dump truck to keep it running smoothly clean and productive.

[Updated June 26, 2019]

❖ How to Drive a Dump Truck

<https://itstillruns.com/drive-dump-truck-4815829.html>

This webpage provides a guide on driving a dump truck.

[Updated June 26, 2019]

Rigid on-highway dump truck NC II

This qualification consists of competencies that workers must achieve to enable them to perform tasks such as loading and dumping of earth materials in the construction, mining sites or other locations.

Core Competencies

- Perform pre- and post-operation procedures for hauling equipment
- Perform basic preventive maintenance servicing for hauling equipment
- Perform productive operation for on-highway dump truck (rigid)

❖ How to Use a Dump Truck

<http://www.stepbystep.com/how-to-use-a-dump-truck-38560/>

This webpage provides information on operating a dump truck in three simple steps.

[Updated February 7, 2019]

❖ How to Operate a PTO on a Dump Truck

<https://www.hunker.com/13425640/how-to-operate-a-pto-on-a-dump-truck>

This webpage provides the procedures in operating a power take-off (PTO) on a dump truck to raise the bed and unload its contents.

[Updated February 7, 2019]

❖ How to Maintain Your Dump Truck's Like-New Condition

<https://carlifeneration.com/how-to-maintain-your-dump-trucks-like-new-condition/>

This webpage provides information on maintaining dump trucks to achieve the best of its performance.

[Updated February 7, 2019]

Rigging NC I

This qualification consists of competencies that workers must achieve to enable them to perform tasks such inspecting and installing rigging gears and guiding crane operators in construction sites or other locations.

Core Competencies

- Inspect rigging gears

❖ Rigging Gear Inspection Guidelines

http://www.irclancy.com/downloads/JRC_2007-02%20Rigging%20Inspection%20Guideline.pdf

This webpage contains downloadable checklist in PDF for the inspection of rigging equipment.

[Updated February 7, 2019]

❖ Offshore Platform Construction: Topside Module Installation

<https://www.youtube.com/watch?v=SJLksOuNav4>

This webpage contains a video on the construction of an offshore platform.

[Updated February 7, 2019]

INTERNET RESOURCES

<ul style="list-style-type: none"> • Install rigging gears • Assist crane operator 	<ul style="list-style-type: none"> ❖ Rigging Gear; Riggers Lifting Equipment https://www.liftingsafety.co.uk/category/rigging-equipment-1209.html This webpage contains various lifting equipment and tools for rigging and lifting with illustrations and links to related items. [Updated February 7, 2019] ❖ Hoisting and Rigging Safety Manual https://www.ihsa.ca/PDFs/Products/Id/M035.pdf This webpage provides a downloadable PDF describing safety in performing rigging and hoisting operations. [Updated February 7, 2019]
<p>Road roller NC II</p> <p>This qualification consists of competencies that workers must achieve to enable them to perform task such as compacting earth materials in construction sites or other locations.</p> <p>Core Competencies</p> <ul style="list-style-type: none"> • Perform pre- and post-operation procedures for earth moving equipment • Perform basic preventive maintenance servicing for earth moving equipment • Perform productive operation for road roller [Compactor] 	<ul style="list-style-type: none"> ❖ Road Roller https://en.wikipedia.org/wiki/Road_roller This webpage defines road roller as a compactor type engineering vehicle used to compact soil, gravel, concrete or asphalt in the construction of roads and foundations. [Updated February 7, 2019] ❖ Safe Work Procedures Roller/ Compactor http://www.marsonhire.com.au/images/uploads/downloads/SWP_Roller_Compactor.pdf This webpage presents a chart of instruction for operating a road roller/ compactor. [Updated February 7, 2019] ❖ How to Grade a Gravel Driveway https://www.drpowerblog.com/how-to-grade-a-gravel-driveway/ This webpage provides information on using mini compactor to prepare the driveway for paving. [Updated February 7, 2019] ❖ How to Improve the life of small road rollers through maintenance http://www.haohongcn.com/newsdetail.aspx?id=10 This webpage provides information on maintaining small road rollers to extend its useful life. [Updated February 7, 2019]
<p>Rough terrain crane NC II</p> <p>This qualification consists of competencies that workers must achieve to enable them to perform tasks such as lifting and transferring of heavy loads in construction sites or other locations with the use of a rough-terrain crane (with telescopic or lattice booms).</p> <p>Core Competencies</p> <ul style="list-style-type: none"> • Perform pre- and post-operation procedures for lifting equipment • Perform basic preventive-maintenance servicing for lifting equipment • Perform productive operation for rough-terrain crane 	<ul style="list-style-type: none"> ❖ Rough Terrain Crane https://apcranetraining.com/rough-terrain/ This webpage defines rough terrain crane as a subclass of a hydraulic crane and self-propelled mounted on an undercarriage with four or more rubber tires. [Updated February 7, 2019] ❖ Rough Terrain Crane Training https://hardhattraining.com/rough-terrain-crane/ This webpage provides information about rough terrain crane. [Updated February 7, 2019] ❖ Rough Terrain Cranes Lift Job Site Versatility https://www.constructionequipment.com/rough-terrain-cranes-lift-job-site-versatility This webpage provides information on the operation of rough terrain crane. [Updated February 7, 2019] ❖ How to maintain the heavy crane, especially Groove RT65S to get the best work? https://www.micoequipment.com/blog/how-to-maintain-the-heavy-

INTERNET RESOURCES

	<p>crane-especially-groove-rt65s-to-get-the-best-work/ This webpage provides information on the maintenance of the RT65S rough terrain crane. [Updated February 7, 2019]</p>
<p>Scaffold erection NC II</p> <p>This qualification consists of competencies that individuals must achieve to enable them to erect and dismantle scaffolding and safely handle scaffolding tools and equipment.</p> <p>Core Competencies</p> <ul style="list-style-type: none"> • Erect and dismantle scaffolding • Handle scaffolding equipment and tools 	<p>❖ Scaffolding https://en.wikipedia.org/wiki/Scaffolding This webpage defines scaffolding (also called scaffold or staging) is a temporary structure used to support a work crew and materials to aid in the construction, maintenance and repair of buildings, bridges and all other man-made structures. [Updated June 27, 2019]</p> <p>❖ How to Erect Scaffolding https://www.wikihow.com/Erect-Scaffolding This webpage provides the steps on erecting scaffoldings with pictures, animation video. [Updated June 27, 2019]</p> <p>❖ How to Perform Inspection & Maintenance on Scaffolding Parts and Accessories: A Comprehensive Checklist https://at-pac.com/resource/how-to-perform-inspection-maintenance-on-scaffolding-parts-and-accessories-a-comprehensive-checklist/ This webpage provides information and instructions in performing inspection and maintenance of scaffolding parts and accessories with comprehensive checklist. [Updated June 27, 2019]</p>
<p>Screed operation NC II</p> <p>This qualification consists of competencies that workers must achieve to enable them to perform tasks such performing pre- and post-operation checking procedures for screed and other attachment of asphalt paver; and operating and monitoring screed of asphalt paver for constructing roads.</p> <p>Core Competencies</p> <ul style="list-style-type: none"> • Perform pre- and post-checking procedures for screed • Operate and monitor screed 	<p>❖ Screed https://en.wikipedia.org/wiki/Screed This webpage defines screed as a flat board (screed board, floating screed) or a purpose-made aluminum tool used to smooth and true materials like concrete, stucco and plaster after it has been placed on a surface or to assist in flattening. [Updated June 27, 2019]</p> <p>❖ “Strikeoff” or “Screeding” the Concrete https://www.concretenetwork.com/concrete/concrete_tools/screeding_the_concrete.htm This webpage provides information and guide in using the screed to flatten poured concrete on a surface. [Updated June 27, 2019]</p> <p>❖ Using F-Number to Measure a Concrete Floor’s Flatness https://www.concretedecor.net/decorativeconcretearticles/vol-12-no-4-mayjune-2012/using-f-numbers-to-measure-a-concrete-floore28099s-flatness/ This webpage provides information and guide in checking the flatness of a floor using F-numbers. [Updated June 27, 2019]</p>
<p>Structural erection NC II</p> <p>This qualification consists of competencies that a person must achieve to enable him to position and fit-up structural framework in any construction sites.</p> <p>Core Competencies</p>	<p>❖ Fabrication and Erection of Steel Structures http://northern-weldarc.com/fabrication-erection-steel-structures// This webpage defines the process of steel fabrication and techniques in steel erection which is required in building structures. [Updated June 27, 2019]</p> <p>❖ Structural Steel Erection https://wollamconstruction.com/services/structural-steel-erection// This webpage provides information on the erection of structural</p>

INTERNET RESOURCES

<ul style="list-style-type: none"> Position structural member Fit-up structural member Perform tack welding <p>Elective Competencies</p> <ul style="list-style-type: none"> Lay-out structural member Build low spot or remove high spot 	<p>steelwork which consists of steel components on the framework for any construction project. [Updated June 27, 2019]</p> <p>❖ Framing Schematics https://www.steelconstruction.info/Framing_schematics This webpage provides information on structural framing using schematic diagrams to locate structural member of components. [Updated June 27, 2019]</p> <p>❖ Building Structures: Index to Construction, Inspection, Diagnosis, Repair Topics https://inspectapedia.com/structure/Building-Structures.php This webpage provides information on the inspection, diagnosis and repair of building structures. [Updated June 27, 2019]</p>
<p>System formwork installation NC II</p> <p>This Qualification consists of competencies that a person must achieve that will enable him to assemble and dismantle scaffolds/ shoring and braces, perform installation and stripping of system formworks (includes combinations of metal and other materials- e.g. engineered plastic material, laminated plywood), its components and supports. Working together in a team composed of surveyor (line and grade), rebar installer, crane operator, rigger and under the direct supervision of a lead man or foreman.</p> <p>Core Competencies</p> <ul style="list-style-type: none"> Assemble and dismantle scaffolds/ shoring and braces Install system formworks Strip system formworks 	<p>❖ Formwork https://en.wikipedia.org/wiki/Formwork This webpage defines formwork as temporary or permanent molds, into which a concrete or similar material is poured. In the context of concrete construction, the falsework supports the shuttering molds. [Updated June 27, 2019]</p> <p>❖ How Formwork Works https://home.howstuffworks.com/home-improvement/construction/materials/formwork2.htm This webpage provides information on the assembly and installation of formwork for construction of structures. [Updated June 27, 2019]</p> <p>❖ Formwork Construction in Structures https://www.slideshare.net/rithikarockingravishankar/formwork-construction-in-structures This webpage provides a slideshow with text script on formwork construction in structures. [Updated June 27, 2019]</p> <p>❖ How to Remove Concrete Formwork https://www.hunker.com/13425095/how-to-remove-concrete-formwork This webpage provides information and guide in removing formworks after the concrete has cured and dried. [Updated June 28, 2019]</p>
<p>Technical Drafting NC II</p> <p>This Qualification consists of competencies that a person must achieve to enable him / her to draft architectural layout and detail (structural, electrical/electronic, sanitary/plumbing, and mechanical) drawings using both CAD system and manual drafting methods.</p> <p>Core Competencies</p> <ul style="list-style-type: none"> Draft architectural layout and details Prepare computer-aided drawings 	<p>❖ Technical Drawing https://en.wikipedia.org/wiki/Technical_drawing This webpage technical drawing, drafting or drawing, as the act and discipline of composing drawings that visually communicate how something functions or is constructed. [Updated June 28, 2019]</p> <p>❖ Drafting II- Architectural https://www.iss.k12.nc.us/cms/lib/NC01000579/Centricity/Domain/2809/drafting2%20architectural.pdf This is a link to downloadable PDF of curriculum guide on basic architectural drafting. [Updated June 28, 2019]</p> <p>❖ Basic Drafting Standards and Symbols https://www.iar.unicamp.br/lab/luz/ld/Arquitetural/livros/interior%20design%20student%20handbook.pdf</p>

INTERNET RESOURCES

- Draft structural layout and details
- Draft electrical and electronic layout and details
- Draft sanitary and plumbing layout and details
- Draft mechanical layout and details

This is a link to downloadable PDF of basic drafting standard symbols.

[Updated June 28, 2019]

- ❖ **Everything you need to know about Computer Aided Design**
<https://www.creativemechanisms.com/blog/everything-you-need-to-know-about-computer-aided-design-cad>

This webpage provides information on computer aided design with images and video.

[Updated June 28, 2019]

- ❖ **How to Create House Electrical Plan Easily**

<https://www.edrawsoft.com/create-house-electrical-plan.php>

This webpage provides a guide in creating house electrical plan easily using Edraw software and its templates.

[Updated June 28, 2019]

- ❖ **Drafting Sanitary and Plumbing Layout and Details**

<https://www.scribd.com/presentation/324493398/Drafting-Sanitary-and-Plumbing-Layout-and-Details>

This webpage provides an information sheet on drafting sanitary and plumbing layout and details.

[Updated June 28, 2019]

- ❖ **Design Handbook: Engineering Drawing and Sketching**

https://ocw.mit.edu/courses/mechanical-engineering/2-007-design-and-manufacturing-i-spring-2009/related-resources/drawing_and_sketching/

This webpage provides information on drawing mechanical parts.

[Updated June 28, 2019]

Tile setting NC II

This Qualification consists of competencies that a person must achieve to enable him / her to lay and repair floor and wall tiles, tile corners and curved surfaces.

Core Competencies

- Lay and repair floor and wall tiles
- Tile corners
- Tile curved surfaces

- ❖ **Tile**

<https://en.wikipedia.org/wiki/Tile>

This webpage defines tile as a thin object usually square or rectangular in shape, made of ceramic, stone, metal baked clay or even glass generally used for covering roofs, floors, walls, etc.

[Updated June 28, 2019]

- ❖ **How to Lay a Tile Floor**

<https://www.todayshomeowner.com/how-to-lay-a-tile-floor/>

This webpage provides a guide in preparing the floor, laying tiles and finishing.

[Updated June 28, 2019]

- ❖ **How to Repair Tile**

<https://www.wikihow.com/Repair-Tile>

This webpage provides information and guide with illustrations in repairing tiles.

[Updated June 28, 2019]

- ❖ **How to Tile a Curved Wall with Mosaics**

<https://www.tal.co.za/home/index.php?ipkArticleID=98>

This webpage provides information and guide on laying mosaic tiles on curved surfaces.

[Updated June 28, 2019]

- ❖ **How to Tile a Curved Floor**

<https://www.tal.co.za/home/index.php?ipkArticleID=96>

This webpage provides information and guide on laying tiles on curved surfaces.

[Updated June 28, 2019]

INTERNET RESOURCES

Tower crane NC II

This qualification consists of competencies that workers must achieve to enable them to perform tasks such as lifting and transferring of heavy loads in construction sites or other locations with the use of tower crane.

Core Competencies

- Perform pre- and post-operation procedures for lifting equipment
- Perform productive operation for tower crane

❖ How to Become a Tower Crane Operator

<https://www.wikihow.com/Become-a-Tower-Crane-Operator>

This webpage provides information on pursuing a career as a tower crane operator.

[Updated February 7, 2019]

❖ How to Maintain a Tower Crane

<http://www.towercranechina.com/new/how-to-maintain-a-tower-crane.html>

This webpage provides information in maintaining a tower crane.

[Updated February 7, 2019]

❖ How Tower Cranes Work

<https://science.howstuffworks.com/transport/engines-equipment/tower-crane.htm>

This webpage provides information with illustrations on tower crane operation.

[Updated June 28, 2019]

Transit mixer NC II

This qualification consists of competencies that workers must achieve to enable them to perform tasks such as loading ready-mixed concrete from the batching plant, delivering and discharging ready-mixed concrete from the construction / job site.

Core Competencies

- Perform pre- and post-operation procedures for concreting and asphaltting equipment
- Perform basic preventive maintenance servicing for concreting and asphaltting equipment
- Perform productive operation for transit mixer

❖ Transit Mixer | Parts | Concrete Discharging

<http://www.engineeringintro.com/all-about-construction-equipments/transit-mixer-parts-concrete-discharging/>

This webpage provides information about transit mixer, its parts and operation.

[Updated February 7, 2019]

❖ How to Operate a Concrete Mixing Truck

<http://unique-cons.com/service-and-training/training-service/281-how-to-operate-a-concrete-mixing-truck.html>

This webpage provides information on the operation of transit mixer.

[Updated February 7, 2019]

❖ How Cement Mixers Work

<https://science.howstuffworks.com/transport/engines-equipment/cement-mixer.htm>

This webpage provides information on the principle of operation of cement mixers.

[Updated February 7, 2019]

Truck-mounted crane NC II

This qualification consists of competencies that workers must achieve to enable them to perform tasks such as lifting and transferring of heavy loads in construction sites or other locations with the use of a truck-mounted crane.

Core Competencies

- Perform pre- and post-operation procedures for lifting equipment
- Perform basic preventive maintenance servicing for

❖ How to Properly Use Crane Trucks

<http://www.hydrauliccranetruck.com/properly-use-crane-trucks-safety/>

This webpage provides information on the operation of crane trucks with additional topics on training and certification, controls, safety, and inspection.

[Updated February 7, 2019]

❖ The Motions and Mechanics of a Truck-Mounted Crane

<https://www.comsol.com/blogs/the-motions-and-mechanics-of-a-truck-mounted-crane/>

This webpage provides information with illustrations and relevant data on the operations of truck-mounted crane.

[Updated February 7, 2019]

❖ Seven Questions to Ask Before Fitting a Crane tor Trucks

<https://www.utilityproducts.com/articles/print/volume-8/issue->

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<p>lifting equipment</p> <ul style="list-style-type: none"> • Perform productive operation for truck-mounted crane 	<p>6/product-focus/vehicles-accessories/seven-questions-to-ask-before-fitting-a-crane-to-a-truck.html</p> <p>This webpage provides tips and instructions on fitting crane to a truck including safety and government regulations. [Updated February 7, 2019]</p>
<p>Wheel loader NC II</p> <p>This qualification consists of competencies that workers must achieve to enable them to perform tasks such as loading, carrying, dumping and / or stockpiling of earth and other materials in construction or mining sites or other locations with the use of wheel loader.</p> <p>Core Competencies</p> <ul style="list-style-type: none"> • Perform pre- and post-operation procedures for earth-moving equipment • Perform basic preventive maintenance servicing for earth-moving equipment • Perform productive operation for wheel loader 	<p>❖ Tips on how to operate the CAT 966F wheel loader equipment</p> <p>https://www.micoequipment.com/blog/tips-on-how-to-operate-the-cat-966f-wheel-loader-equipment/</p> <p>This webpage provides information on the operation of wheel loaders particularly the CAT 966F. [Updated February 7, 2019]</p> <p>❖ Make Time for Wheel Loader Maintenance</p> <p>https://www.forconstructionpros.com/equipment/earthmoving/loaders/article/10117175/make-time-for-wheel-loader-maintenance</p> <p>This webpage provides information about wheel loaders and how to maintain it for maximum productivity. [Updated February 7, 2019]</p> <p>❖ Wheel Loader – Operation & Safety</p> <p>https://www.vista-training.com/training/silver-series/wheel-loader</p> <p>This webpage provides information on the operation of wheel loader. [Updated February 7, 2019]</p>